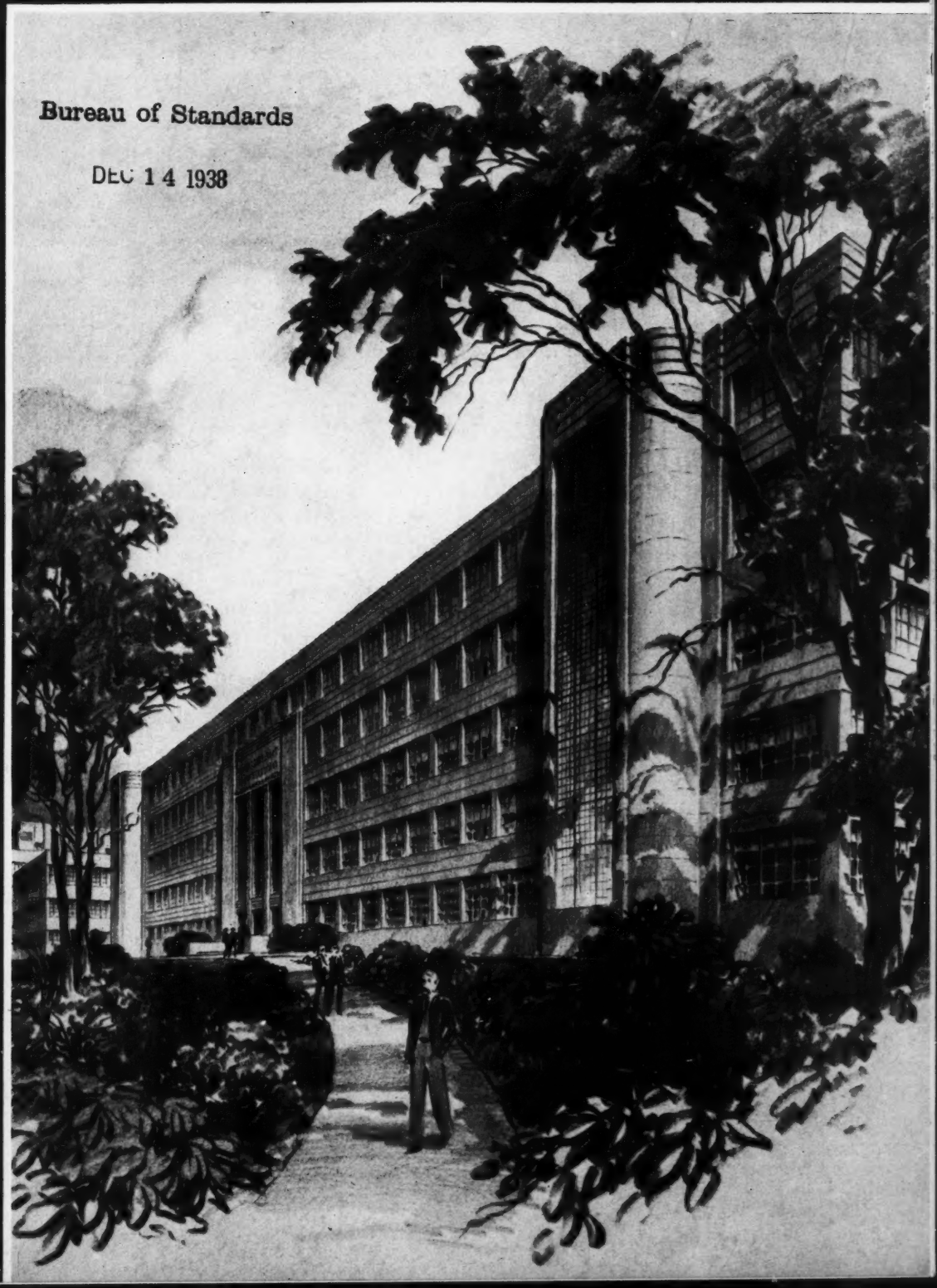
The CORNELL ENGINEER



The College of Engineering

Cornell University

Offers Courses of Study in the Following Fields:

Civil Engineering

1. General four-year course leading to the degree of Bachelor of Civil Engineering. Options are offered in Administrative Engineering, Sanitary Engineering, Structural Engineering, Hydraulic Engineering, Transportation Engineering and Geodetic Engineering.
2. Six-year course leading to the degrees of Bachelor of Arts and Bachelor of Civil Engineering.
3. Four-year course in Administrative Engineering in Civil Engineering leading to the degree of Bachelor of Science in Administrative Engineering.

Mechanical Engineering

1. General four-year course leading to the degree of Bachelor of Mechanical Engineering. Options are offered in the senior year in Power-Plant Engineering, Heat Engineering, Industrial Engineering, Automotive Engineering, Aeronautical Engineering, and Hydraulic Power-Plant Engineering.
2. Five-year course leading to the degree of Bachelor of Mechanical Engineering.
3. Six-year course leading to the degrees of Bachelor of Arts and Bachelor of Mechanical Engineering.
4. Four-year course in Administrative Engineering in Mechanical Engineering, leading to the degree of Bachelor of Science in Administrative Engineering.

Electrical Engineering

1. General four-year course leading to the degree of Bachelor of Electrical Engineering. A Physics option covering the third and fourth years is available.
2. Six-year course leading to the degrees of Bachelor of Arts and Bachelor of Electrical Engineering.
3. Four-year course in Administrative Engineering in Electrical Engineering leading to the degree of Bachelor of Science in Administrative Engineering.

Chemical Engineering

1. Five-year course leading to the degree of Bachelor of Chemical Engineering.

Graduate Work

Courses leading to the Master's and Doctor's degrees are available in all the above fields.

Engineering Research

Facilities are available for conducting fundamental and industrial researches in the foregoing fields in cooperation with industries.

For Detailed Information, Address

The Dean of the College of Engineering, Cornell University

Ithaca, New York

❖ This Month and Next

Since the plans for developing the resources of the College of Engineering at Cornell have been described and discussed in the newspapers and the Alumni News during the past few weeks, we know that many of our readers, alumni, faculty members, and students will be interested in the more complete and detailed description of the proposed program which we are publishing in this issue of the Cornell Engineer.

The three articles cover the three essential phases of the program. President Day discusses the educational ideals that will guide the college in the future; Dean Hollister gives a clear picture of the needs of the college; and R. H. Shreve describes in detail the architectural features of the plant that will someday take the place of the present buildings.

We have endeavored by supplying numerous illustrations to answer questions that we thought might arise in the minds of alumni familiar with the present plant and naturally interested in how it is to be modified and changed.

We plan to publish in succeeding issues comments and suggestions as they are received from alumni interested in the progress of the campaign.

●

In this issue we have devoted two pages to interesting personalities, including articles on one professor and one junior undergraduate, in addition to the two we have heretofore published about seniors. We feel that it is interesting to everybody to catch a glimpse of the personal side of a professor's life. Furthermore, the undergraduates in the various schools usually are unacquainted with the professors in the other schools, and we hope that the articles in the CORNELL ENGINEER will help the students in learning to know and appreciate the members of the faculty in the schools outside of their own.

●

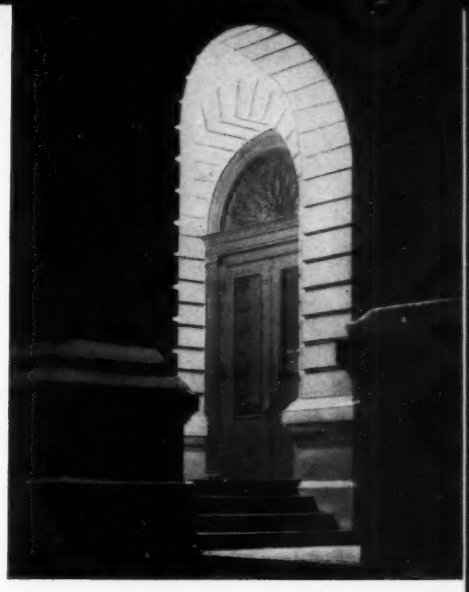
In this issue we have published the picture of the senior class of the Sibley School of Mechanical Engineering. Next month we plan to publish the pictures of the senior class of the Civil Engineering School and of the senior class of the Electrical Engineering School.

The

CORNELL ENGINEER

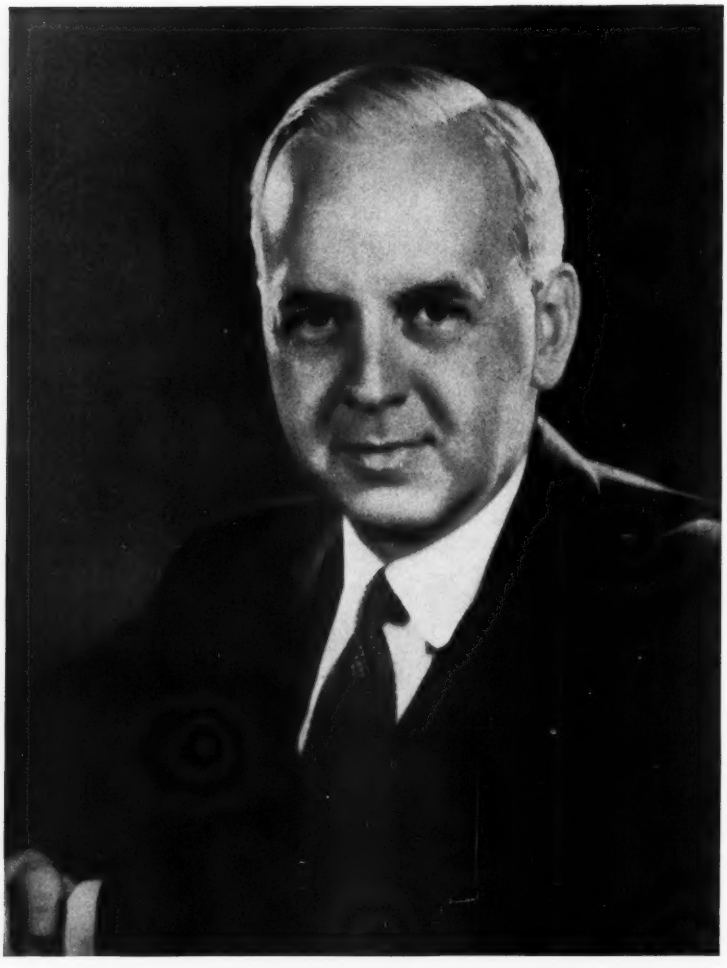
for DECEMBER, 1938

VOLUME 4 NUMBER 3



CONTENTS

Published monthly—October to May—by undergraduates of the College of Engineering, Cornell University. Entered as second class matter at the Post Office at Ithaca, N. Y., under section 103, Act of October 3, 1917.
Subscription per year: regular $1.50; with membership in the Cornell Society of Engineers $2.00, see President's page. Student $1.00; single copy $.20.



THERE can be no doubt that at one time Cornell engineering was in a position of unmistakable leadership. That position is no longer uncontested. There are now powerful competitors; the going is much more severe than it was. Whatever may be the difficulties, I propose to do everything I can to sustain the Cornell tradition of positive leadership in the engineering field.

—*President* EDMUND E. DAY

Plan To Strengthen The College Discussed

Cornell Society of Engineers Hears President, Trustees, Dean, and Architect Explain Project for Increasing Endowment and Modernizing Plant

More than 150 members and guests of the Cornell Society of Engineers gathered at the Cornell Club of New York on November 10 to hear President Edmund E. Day, Trustees J. DuPratt White '90 and Bancroft Gherardi '93, Dean S. C. Hollister, and R. H. Shreve '02 discuss plans for the future of the College of Engineering. The distinguished gathering included Trustees Ezra Whitman '01, Maxwell Upson '99, Roger Williams '95, Charles Blair '98, and Thomas Boak '14, and the directors of the four engineering schools: W. N. Barnard '97, Mechanical Engineering; P. M. Lincoln, Electrical Engineering; W. L. Malcolm, Ph.D. '34, Civil Engineering; and F. H. Rhodes, Ph.D. '14, Chemical Engineering, all of whom were introduced by President Walker Cisler '22 of the Society.

Cisler and Gherardi Speak

Aided by lantern slides and an exhibit of architectural drawings, the speakers explained in detail a general plan for reinforcing the resources of the College, including faculty, buildings, and equipment. The importance of the project was emphasized by President Cisler in these words: "I do not believe that there is any activity on the part of President Day or the Board of Trustees of the University which can be productive of more good than an active and sustained interest in the College of Engineering. I believe from my own personal observation that much of the prestige of Cornell rests upon the engineering graduates." He then turned the meeting over to Trustee Gherardi, former vice president and chief engineer of the American Telephone and Telegraph Company, who is chairman of a special committee to obtain funds for development of the College.

Characterizing the College as "one of the outstanding engineering institutions of the country," Mr. Gherardi asserted that in order to maintain this position it needs substantial additions to endowment for faculty salaries and to physical plant and equipment. He recalled that many of the present buildings were on the campus when he was an undergraduate in the 90s, and that the Board of Trustees, more than ten years ago, prepared plans for developments which were halted by the depression. The present program, under careful consideration by the Trustees, the administration, and the engineering faculty for several years, calls for an increase in endowment for named professorships and general faculty salaries of $2,500,000; and two new buildings, a home for the School of Chemical Engineering and a Materials and Metallurgy Laboratory, which, together with equipment and endowment for maintenance, will cost $3,500,000. Other buildings will be added from time to time thereafter, until the present engineering group, with the exception of Rand Hall, has been displaced by modern structures.

Trustees Bancroft Gherardi '93 and J. DuPratt White '90, who spoke at the dinner in New York

White Discusses Finances

As vice chairman of the Board of Trustees and chairman of the Trustee Committee on Funds for the Endowed Colleges, Mr. White sketched the recent actions of the Board in investigating the general needs of the University and in organizing for "the further advancement financially of our Alma Mater." This Trustee Committee, he said, will have a full-time secretary, who will be a high administrative officer in the University charged with the responsibility of coordinating "efforts by the University in all fields among all peoples to gather further rich endowment for our institution." He paid special tribute to the work of the Cornellian Council and said that the present plan will coordinate this splendid effort of alumni with the work of the Trustees.

"Among the problems of this committee," he continued, "is that of the College of Engineering. Engineering was established at the founding of the Uni-

versity in 1868. I think we may fairly say that the profession of engineering started with Cornell and has progressed under Cornell leadership down to modern times." He stressed the fact that at Cornell engineering has developed as one of many professions for which the University offers training—medicine, veterinary medicine, agriculture, architecture, law. "The scope of all those institutions is always to me staggering," he said.

"I go around and meet groups of engineers, or I meet groups of architects, or notably I meet groups of medical men or of veterinarians, or of lawyers, all different, one from the other, all engaged in the top activities of their several professions; and there is nothing to me that is more impressive, or gives a clearer understanding of the great scope of the activities of Cornell University."

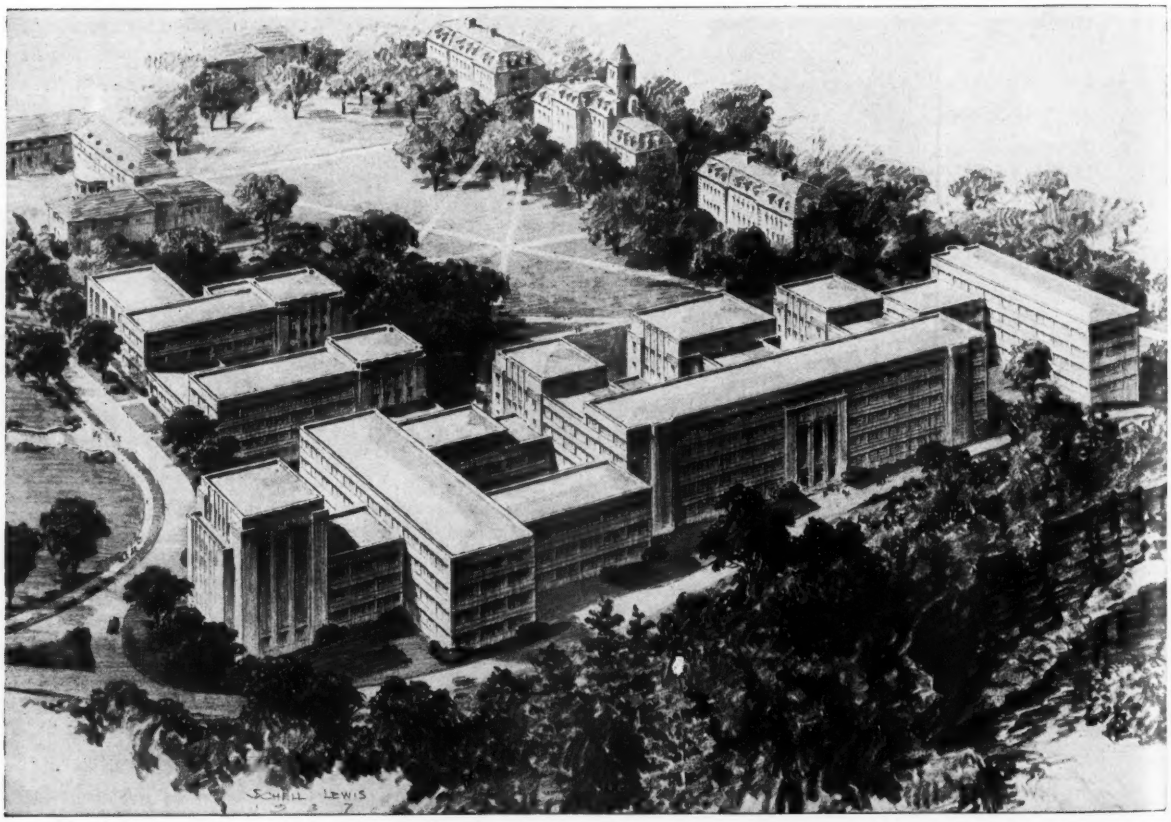
Three Speeches Printed

President Day also discussed at length the educational importance of engineering training in a University having a wide variety of interests. Slightly condensed versions of his address and the addresses of Dean Hollister and Mr. Shreve, the architect, are printed in the following pages.

Drawings Also Reproduced

Many of the drawings and several of the lantern slides shown at the New York meeting are also reproduced. They show how the entire group of projected buildings will look in relation to other structures on the Main Quadrangle, and how the two buildings most seriously needed today will fit into the present engineering group. The proposed home for the School of Chemical Engineering can be erected without disturbing any existing structure. With additional floor space available, laboratories and offices now housed in the mechanical laboratory buildings can be moved while the Materials and Metallurgy Laboratory is under construction. Hence the entire building program can be carried out over a period of years without seriously disturbing the educational work of the College, even though the new buildings will occupy the same general site as the old.

Architect's Drawing of the Entire New Group of Engineering Buildings



The projected buildings for the College of Engineering, seen from the north. As indicated, they will approach Goldwin Smith Hall on the east side of the Main Quadrangle, extend north almost to the gorge, and swing west to the present site of Morse Hall. For comparison with the present buildings, see the airplane view on p. 9, and for a floor plan and other details, see pp. 14 and 15.

The Future of Engineering At Cornell

By Dr. Edmund E. Day
President of the University

Mr. Toastmaster, President Cisler, and Fellow Engineers: I use that form of address intentionally on two grounds. In the first place, I construe the nature of my job as akin to engineering. Certainly in my day-to-day work, I have occasion, like you, to deal with resistant materials. In the second place, there was a time when I thought of myself as an engineer in the making. As I told some of you a year ago, I prepared for an engineering college. For a number of years I spent all my vacation time trying to become an engineer; and, believe it or not, at one stage in that program I acquired civil service status as an engineer in the service of the State of Massachusetts.

Engineering of Personal Interest

In terms of university administration, I suspect that I am "vulnerable" on the engineering side. Certainly I have come to feel a special interest in the Engineering College at Cornell. When I moved into the work of my present office I soon discovered that I had not fully appreciated the place of engineering in the history of the University. Of course, I knew that engineering had been important at Cornell. That was brought to my attention many years ago through the decision of one of my boyhood companions in Worcester, Massachusetts, to go to Cornell for engineering training. Cornell at that time seemed away off, out toward the West. We had an engineering college at Worcester, but this friend of mine advised me —this was back in 1901—that the best training for engineers was at Cornell, and he was going out there to get it. Curiously enough, when I went back last year to visit the Cornell Club of Worcester, that man showed up as its president.

As I traveled around last year on the alumni circuit—and I did a good deal of traveling on that circuit, visiting in all a total of thirty-seven different communities and a total of some fifty different clubs—I soon came to recognize that important figures in club after club were graduates of the Engineering College. That was true of the very first club I visited, which was the club of Seattle, Washington, and I found it so in numerous other communities. The more I came to study the alumni of this institution of ours, the more I became aware of the fact that the engineering graduates constituted an exceptionally potent and distinguished company.

It is one of my theories of sound administration that it is ordinarily wisest to strengthen where you are already strong rather than to try to level up all around where you are not so strong. I felt compelled, therefore, to go back and canvass the situation to see where the University stands now in this field in which it has had so distinguished a past.

There can be no doubt that at one time Cornell engineering was in a position of unmistakable leadership. That position is no longer uncontested. There are now powerful competitors; the going is much more severe than it was. Whatever may be the difficulties, I propose to do everything I can to sustain the Cornell tradition of positive leadership in the engineering field.

I have been tremendously impressed, as I have looked over conditions on the campus, with what has seemed to me an unmistakable need to strengthen the resources of the Engineering College. In the past twenty-five years few changes have occurred in the plans and equipment of this part of the University. That has to be corrected; hence the plans which have been prepared by the combined efforts of Trustees, Faculty, and administration.

In presenting those plans, I think it should be clearly understood that the administration has its feet squarely on the ground. We are not dreaming *idle* dreams. We have certain ideas as to why and how the dreams we are entertaining can be realized.

Cornell's Special Opportunity

It would be unwise, in my opinion, for us to think in terms of an undiscriminating competition with some of the rival institutions. They have their large endowments or generous tax support. It is quite likely that they will have means to work with at least equivalent to our own.

It seems to me clear that our chance of retaining the prestige of Cornell in the engineering field lies in a sagacious adaptation of training at Cornell to the peculiar opportunities and resources which lie within our University. To be more concrete, we have the advantage—and it is an important advantage—of being able to institute a thoroughly selective admissions policy. There is no reason why we should be flooded with numbers, or overburdened by the necessity of accepting a large number of students certified by authorities that we cannot control. I am quite sure that the Engineering College should not become in size comparable with some of the other engineering colleges. It should

remain one of the smaller institutions, with a carefully chosen set of students, well prepared, giving fine promise. The selective principle of admissions I regard as essential to the plans for the further development of the Engineering College, and in that connection graduates of the College can render a valuable service in pointing toward Cornell the right kind of student material.

The Educational Trend

In the second place, it seems to me, we have to capitalize the advantages which lie in the close association of engineering at Cornell with other divisions of the University. That ought to be a great advantage to the Engineering College, if engineering training is going to move in the direction in which, in my opinion, it ought to move in the next ten or twenty years. I believe that the day of extreme technical specialization is passing; that in the time to come the best of the engineers will be hiring most of the technical specialists. The leading engineers will be men of broader gauge, of wider understanding, of more varied competence. That would seem to mean clearly the liberalization of the engineering curriculum in two or three different directions.

In the first place, I think it has to be liberalized in the direction of basic science. You may call that a peculiar kind of liberalizing, but I think the over-all engineering leader is going to have an understanding of fundamental science, making it possible for him to deal wisely with specialists who will be in his employ.

Some of the liberalizing, I think, lies somewhat further afield. Thorough mastery of English in both written and spoken forms is much to be desired. In that connection we shall continue to have access to the splendid facilities of the University outside of the Engineering College.

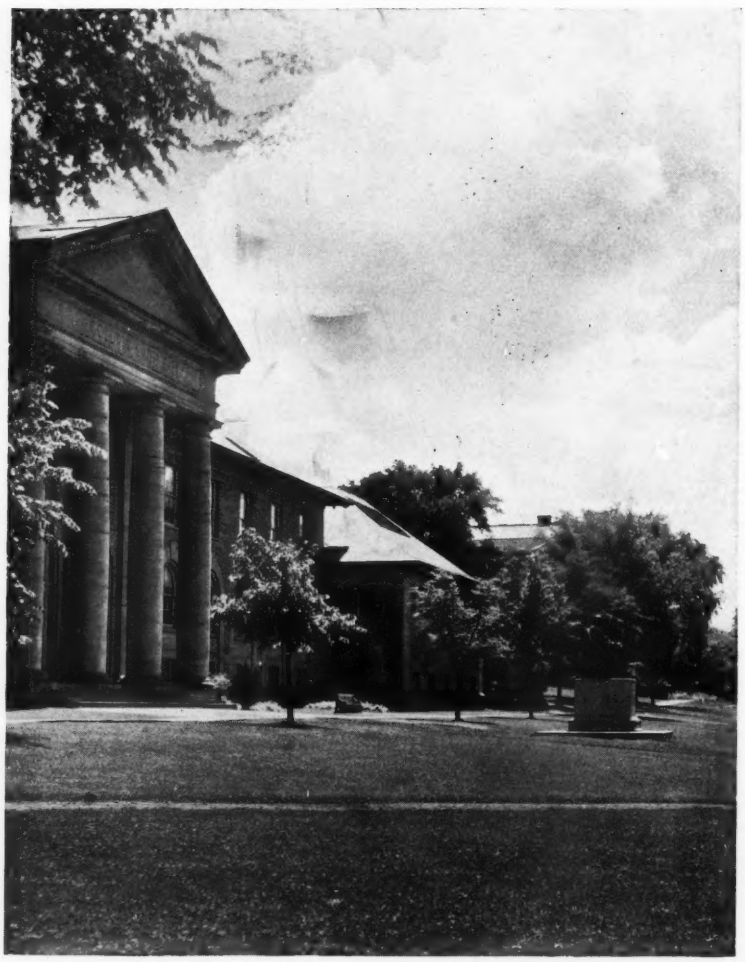
I feel similarly about an undertsanding of the essentials of the economic and social order. That is another large contract. What I have in mind is not an extended program which would attempt to turn engineers into social scientists. I am thinking, rather, of a kind of basic understanding of what is going on in this world of ours, what is happening to our democratic institutions, what is reshaping our economic system, what is the nature of the great social forces which impinge upon us in various quarters. How about the labor movement? What does it mean, and where is it taking us?

We ought all to be oriented in this world in which we have to do business. The engineers ought to know something of the social impacts of the technology which they manage. I would like to see the engineers who come out of our College of Engineering at Cornell intelligently trained along these lines; not technically trained in the social sciences, but intelligently alive and sensitive to what is going on in the world in which they operate.

Enriching Life

Again, I would like to see the engineers come out of this College of ours enriching their individual lives with effective access to our cultural heritage—literature, art, what you will. The necessity of this for well-grounded living becomes more and more evident the more we live with purely technical interests and activities. I think engineers need to gather into themselves early in life interests of a cultural nature with which to deepen their lives as they move up in their chosen profession.

All of this has its bearing upon what the advances of the Engineering College at Cornell can be in the setting of the intimate associations of the Engineering College in our



Goldwin Smith Hall, central building of the College of Arts and Sciences

The Present Main Quadrangle of the University, Seen from the Air

How well the College of Engineering is situated in relation to other divisions of the University is shown in this airplane view from the north. Along the north edge of the Main Quadrangle are the Sibley Buildings, with Rand Hall to the east, Lincoln Hall to the south, and Franklin Hall to the west. The Baker Laboratory of Chemistry and Rockefeller Hall of Physics are across the road to the east, and other buildings of the College of Arts and Sciences and the College of Architecture bound the Quadrangle to the south.

great University. I think if you couple these ideas with the principle of selective admission and with a program of dealing by direct personal contact with a limited number of students in a fitting plant, you have the picture of a successful projection of Cornell's outstanding position in engineering.

This is a large undertaking, as I see it, one for the long pull. Some may think that the University is unduly optimistic in thinking it can bring about anything of the sort. I do not think so, and I have concretely in mind three factors which seem to me to warrant optimism.

Trustees Support Program

In the first place, I think that the Trustees of the University are fully aware of the nature of the problem and will bring the full strength of the Board to bear in realizing the plans.

In the second place, I have great confidence in the present administration of the Engineering College. I regard that factor as of supreme importance. The leadership which comes down from the top of one of these professional schools has an importance for the future of the school which can hardly be exaggerated.

Confidence Placed in Alumni

In the third place, I have confidence in this program because I have confidence in the alumni of the College. As I said at the outset, as I have moved around among the graduates of Cornell, I have found a potency in the graduates of the Engineering College which has convinced me that when they get behind this College in a new way to protect its prestige, there will be no question about the outcome. I am confident that, with a full enlistment of the direct interest and potential enthusiasm and drive of the graduates of Cornell's College of Engineering, a new era is coming in the affairs of the College.

When I put these different factors together, I am optimistic about this large undertaking. As I said before, I shall be doing everything I can do to lend a hand in the program. I fully expect that in the course of my administration I shall see the major part of the program accomplished.

The Development of The College

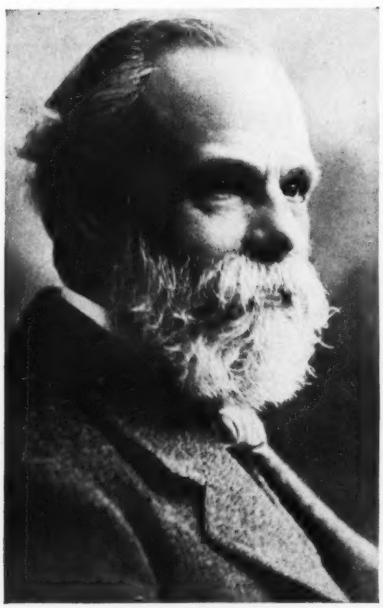
By S. C. Hollister
Dean of the College of Engineering

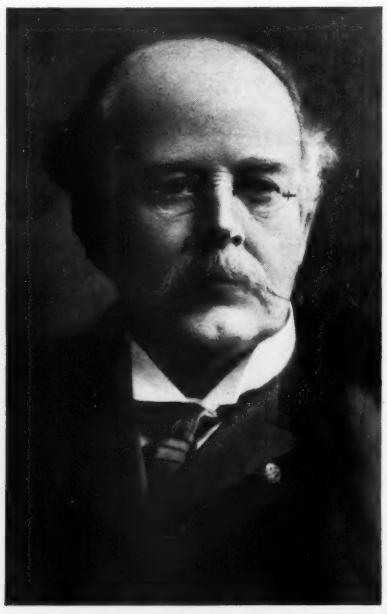
The College of Engineering is made up of the combined former colleges known as Sibley College and the College of Civil Engineering. There is now and has been since 1921 but one College of Engineering. At that time, in 1921, the schools were organized within the College, namely, the Sibley School of Mechanical Engineering, the School of Civil Engineering, and the School of Electrical Engineering. In this past year there has been added a fourth, the School of Chemical Engineering.

I should like briefly to trace the history of engineering at Cornell. With the opening of the doors of the University in 1868, engineering began at Cornell, in civil engineering and in the mechanic arts. In 1883 there was inaugurated in the Department of Physics the first course in electrical engineering, so far as we know, anywhere in the world. That course is still given at Cornell in its developed form in the School of Electrical Engineering.

During the early years there was, of course, but a feeble presentation of engineering as we would view it today. That would cover a period up to about 1885. In that year, Robert H. Thurston came to head Sibley College, as it was then called. There was already presiding over the College of Civil Engineering, as then known, Dean Estevan A. Fuertes. These two men were, without any doubt, the leaders in the development of the College of Engineering as it stands today.

Associated with them are some of the most prominent names known in engineering education in America: Ryan, Durand, Carpenter, Church, Jacoby, Crandall. These men—men who actually carved out the style of engineering that was to be pursued in America, who trained as many as eighty different deans of other colleges of engineering, who trained members of staffs of engineering institutions all over the world—are the men who were the founders of the Cornell tradition in engineering.





Robert H. Thurston and Estevan A. Fuertes, early deans respectively of Sibley College and the College of Civil Engineering

During the time that has passed since the coming of Dr. Thurston and Professor Fuertes, we have seen a phenomenal development in the field of engineering. Since 1885 there has actually been a large expansion of the mileage of the railroads of the country, although today they are tearing up tracks in places; we have seen an expansion and some recession of that great utility. In that period we have seen the development of the highway, largely through the coming of the automobile. We have seen the development of steam from the old Corliss engine, a fine example of which we have in the mechanical laboratory; we have seen it superseded by turbines, capacities of which were totally undreamed of in

1885. We have seen since that time the vast development of the field of communications. We have seen the entire development of the electrical industry in that time. We have seen the development of the chemical industry since that time. We have seen in more recent years the development of the radio, the airplane, and other advances that are about to break,—such, for instance, as television,—things which in 1885 would, in fact, have been laughed at if proposed at that date. We have seen the development of many new metals for engineering uses, if we count the separate alloys as such; there are many of them and they have had a profound influence on the development of manufactures.

All this we have seen since the coming of Dean Fuertes and Dr. Thurston. Cornell has had its leading part in such development, not only through the schools but through their graduates.

At Cornell we have two primary needs. These needs center first upon personnel. I have mentioned some of the "sturdy oaks" whose names have been responsible for the record made at Cornell University in past years. In only a few instances have we been able to replace in kind these great men as they passed. We are constantly subjected to withdrawals of young, promising men from our staff by invitations to go to other institutions. Even this year we lost several men in that way. Frequently, too, we are having staff members invited to join industrial staffs in research or in managerial capacities.

If the College of Engineering is to protect its standard, so far as the standard of staff members is concerned, it must be in a position fairly to resist in competition the raids that can be made upon it by other institutions and by industry. This calls for a salary scale for the staff which must be compatible with salary scales of other institutions and with positions in industry.

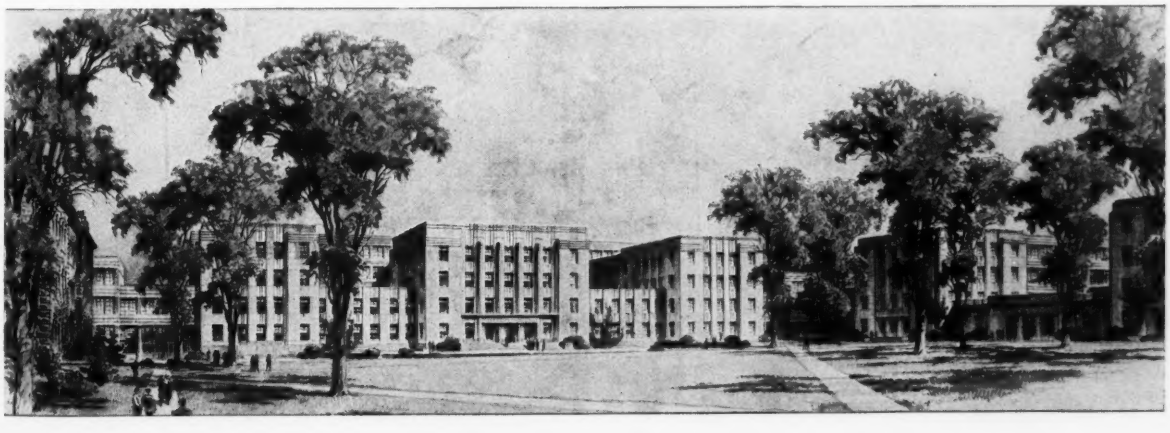
There is still a further point that seems to me worthy of note, when talking on the subject of salary scales, especially for those members of the staff who hold key positions in their fields. In most institutions today, in engineering at least, it is the custom for members of staffs to think of advancement by a transfer to an administrative position. In many instances, by such a transfer, a man who is an outstanding teacher in his field is lost to the teaching profession. It would seem as though it were only proper and only in line with what industry would certainly do under the circumstances, to advance a man in his own field. There should be positions drawing salaries comparable to salaries in industry or comparable to salaries of administrative officers within the school and the College, available to those men who are outstanding in the teaching profession. Those men should advance within their particular field to the high-paying salaries. That is the only way in which the teaching profession can protect itself from loss to industry, loss to an administrative position within the institution, or loss to other institutions for administrative or other purposes.

No college can be greater than the quality of the staff of teachers therein, and it is especially important that the strength of the staff at present be preserved and that it be lifted to a position comparable to what it was in the days of Thurston, Durand, Fuertes, and the others I have mentioned.

With the great development in engineering that has taken place over the past fifty years in this country, there has been an attempt to keep pace in our laboratory facilities in the College so that suitable courses might be offered and the men trained to meet the requirements in industry and in the field. We believe that we have done this with moderate success. Our record of recent graduates indicates that we have.

However, we know we have not done it as well as we should be doing it. We know that there are a number of laboratories that we need which we cannot install for lack of space. We have the same buildings that we had at the turn of the century. They were then about adequate; today they are serving the purpose, but they are distinctly inadequate. Much modernized equipment is certainly necessary to keep pace with the developments in the various fields.

One particular need has to do with the development of chemical engineering on our campus and the recent transfer of chemical engineering from the College of



Arts and Sciences, Department of Chemistry, to the College of Engineering. This unit is at present virtually without a home. It is occupying space in Baker Laboratory, and many of its students are also attending classes in Sibley School of Mechanical Engineering. It is, therefore, as it grows, pressing upon the space that is needed by other units, and at a very early time it is going to be necessary to provide adequately a space where this unit may be brought home. In the plans for new buildings, that space has been provided for. It is hoped also that an additional unit of buildings may be had which will replace the so-called "mech lab" buildings. These mechanical laboratory buildings were built in the early eighties and were supposed to last about twenty-five years. They have lasted another twenty-five and are now on their third.

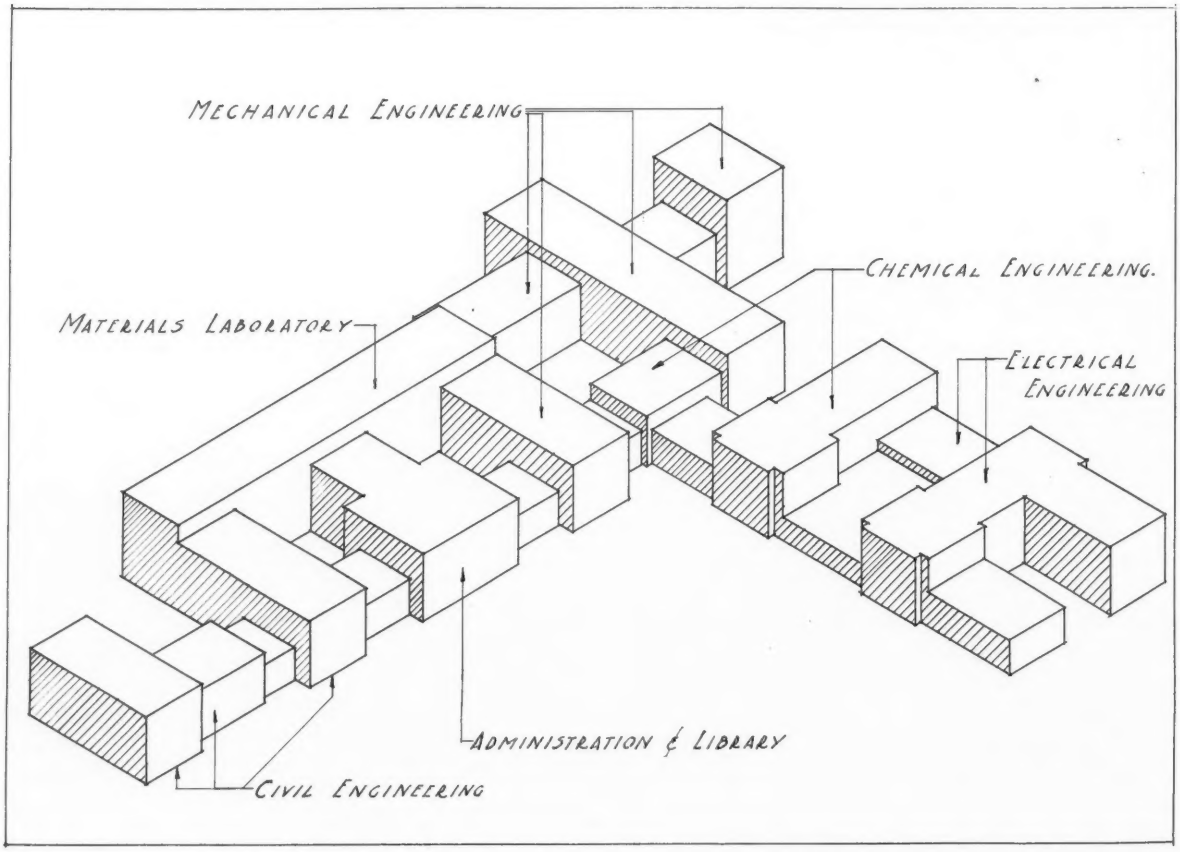
This group of buildings is simply a group of brick shells. It is desired to utilize the space on which these buildings stand to perform the same functions in a new unit and to add many other functions that we cannot at present touch.

It is well known in engineering that one of the important factors in keeping a staff of engineering teachers active is to stimulate the development of research within the units. We are literally without adequate space and equipment to develop the research that the staff itself would like to be carrying on. Much of this research, of course, enhances the quality of instruction; it enhances the reputation of the institution; and it undoubtedly builds for the profession as a whole.

Figures on the cost of supplying our immediate needs are compounded of several factors. One is the capital outlay necessary for new buildings and their equipment. Another one is the operating and maintenance of such buildings and protection against obsolescence of equipment. Still another of very great importance, as I have already said, is the need for improving the status of the salaries of our staff. This latter item would require about two and a half millions endowment. The capital outlay for buildings and equipment, together with a proper maintenance endowment would run to another three and a half millions. The total program of the immediate pressing needs of the College would total in figures, $6,000,000.

With this sum there would be realized an expansion of the three old Schools of Civil, Mechanical, and Electrical Engineering, and a new home for Chemical Engineering; there would be realized a raising of the status of the salaries to a scale comparable with those of other institutions; an opportunity to establish endowed chairs for professorships in various specialized branches of engineering; and the opportunity properly to equip our schools for education and research.

Of these no choice could be made as to pressing needs that would be more important than the choice for named professorships and the proper increase of faculty salaries. That is probably the most pressing need we have; but very close to it and almost inseparable from it are the needs for expanded physical facilities giving us adequate space in which to work.



The Architecture of the Proposed Engineering Group

By R. H. Shreve, *Arch.* '02
Senior Partner, Shreve, Lamb, and Harmon, Architects

I would like to present you with what I think is a rational architectural analysis of an engineering problem. We realized in undertaking what we have studied that we would need to be very careful in many directions in the presentation of a design for a plan. I suggest that this is only such a design for the present. It is a demonstration of a possibility of meeting the limitations which were imposed upon us.

Before fixing those limitations or the definitions of our problem, we cooperated with the members of the faculty and administrative staff at Cornell to set up a questionnaire which would, if answered, assemble for us, from many sources, material which would direct our study. We had need to answer the question: What floor space and what volume of building would be needed to teach a given number of students in a given number of courses under a given system of engineering training at Cornell University? We then went to the leading engineering schools of the eastern section of the United States. We visited Lehigh, Ohio State, Purdue, Illinois, Michigan, Princeton, Yale, and M.I.T., and from sources of that sort we gathered comparative data which would let us make certain assumptions with regard to this program in advance of knowing specific conditions.

With that material at hand, we then set down in the space allotted to engineering on the campus an arrangement of structure, both in floor plan and in mass, which met the program of the dean and his associates, and it indicated the line of thought which we had derived from the data obtained through the questionnaire.

Buildings Strictly Functional

We really had then, you will see, a measuring stick against which to say that a certain volume of building placed on this ground would accommodate the number of students and the number of functions which were stated in the program given us.

The drawings show something of the mass and the design, but design doesn't mean to us mere embellishment of a facade. It doesn't mean the application of some traditional architectural treatment to a structure derived without relation to its function or its placing. The interpretation ought to arise from the conditions which press on the site and work through the functions of the building; and this design has been set up in that way.

We placed our buildings across the north end of the Quadrangle extending as far west as Franklin, as far east as Rand Hall, and toward the south through the site of Lincoln.

Buildings, as the isometric perspective (p. 12) shows, have been placed as if you thought of the letter "E", placed with the ends of the bars toward the Quadrangle and the back of the "E" farthest to the north or the east. Between the ends of the bars, we placed low buildings. You will see the letter "E" on the left and you will see on the right a similar pattern, if you look on the other side of that drawing. The result is that between the ends of the bars are low structures two stories high. The ends of the bars themselves are four stories high, thereby retaining the scale of the old buildings—Morrill, McGraw, and White—and keeping the intimate character of the Quadrangle, which we don't want to overpower or destroy.

Excellent Lighting Provided

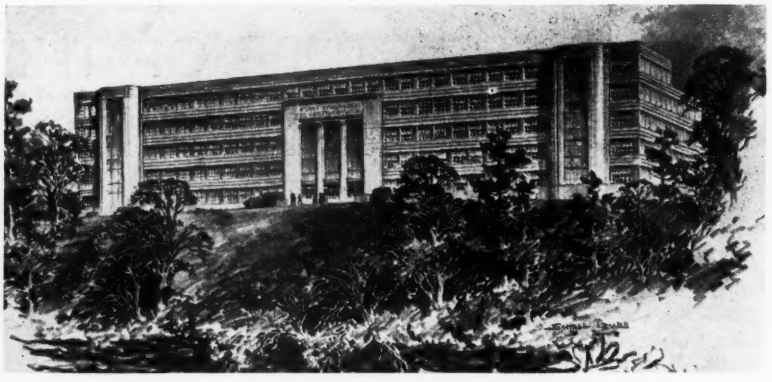
The bars run back from the north side of the Quadrangle to the higher building five stories high. This faces north, toward the gorge and is a strong mass which anchors the rest of the structure. We shall thus have courts from which adjoining buildings can be well lighted and in which there will be no intervening shadows, and the great Testing Materials Laboratory will have an uninterrupted north light.

The Quadrangle, then, will have on the north this new building with the characteristics of the limestone treatment of its front running down through Goldwin Smith, which is in sandstone and limestone, and around through Stimson and Boardman and to the Library, again light grays, so that these three sides of the Quadrangle would afford a harmonious setting for the three historic buildings on the west which tradition would want us to keep.

The interior planning assumed a division, let us say, into twenty-foot bays, three of which would make a building sixty feet across, so from side wall to side wall, if for the moment we assume sixty feet—I don't want you to think of it as a fixed thing—it would be possible to arrange the space internally for varied uses.

It is proposed to set up a standard bay or unit, treated as in our industrial or business buildings. I emphasize that because it is hoped that this plan and the treatment of the buildings will make the space available for far future use, for what may develop in the

(*Continued on page* 25)



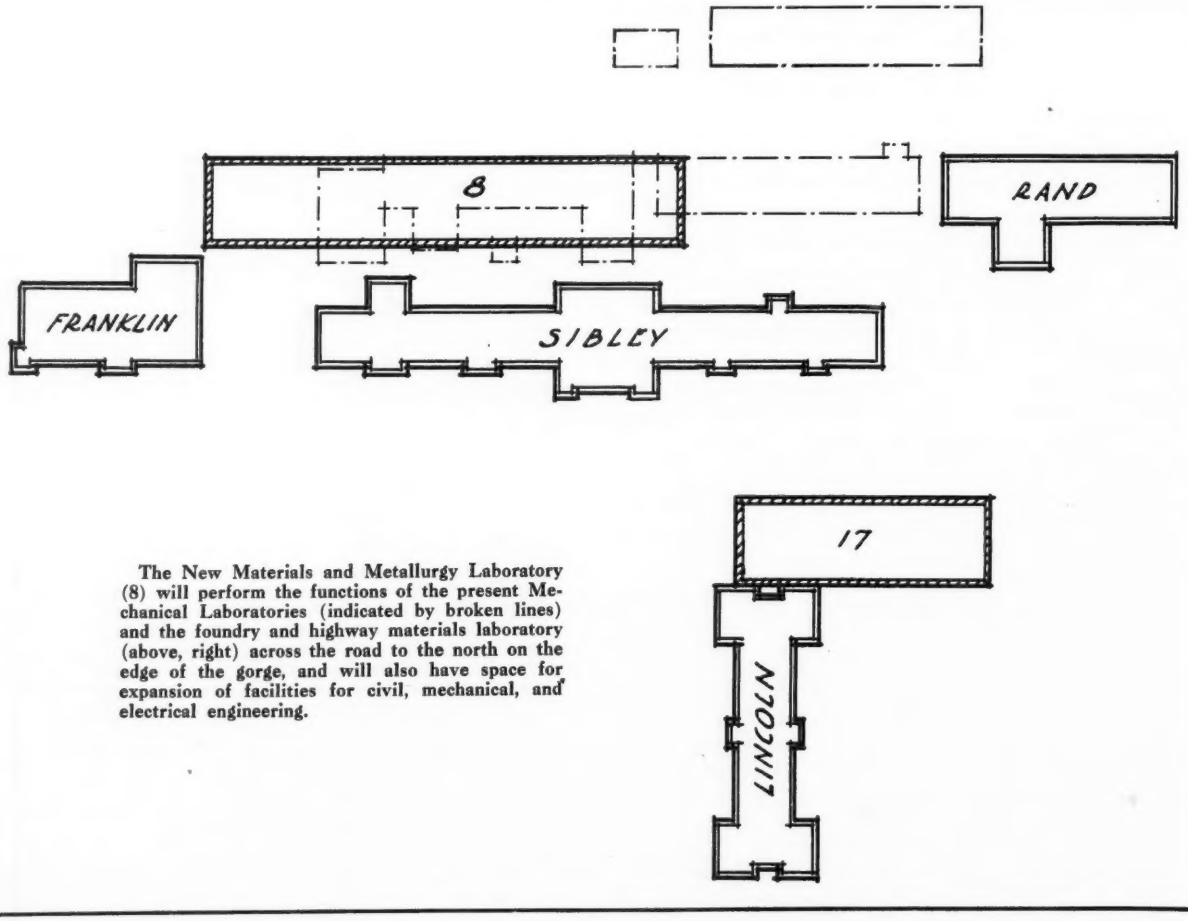
PROPOSI ENGINEER BUILDING

ABOVE ARE the two buildings for which the College has the most pressing need today: (left) a home for the School of Chemical Engineering, and (right) the Materials and Metallurgy Laboratory, which would be available at first for expansion of Civil, Mechanical, and Electrical Engineering as well as for housing laboratory equipment.

Architectural drawings by Shreve, Lamb, and Harmon

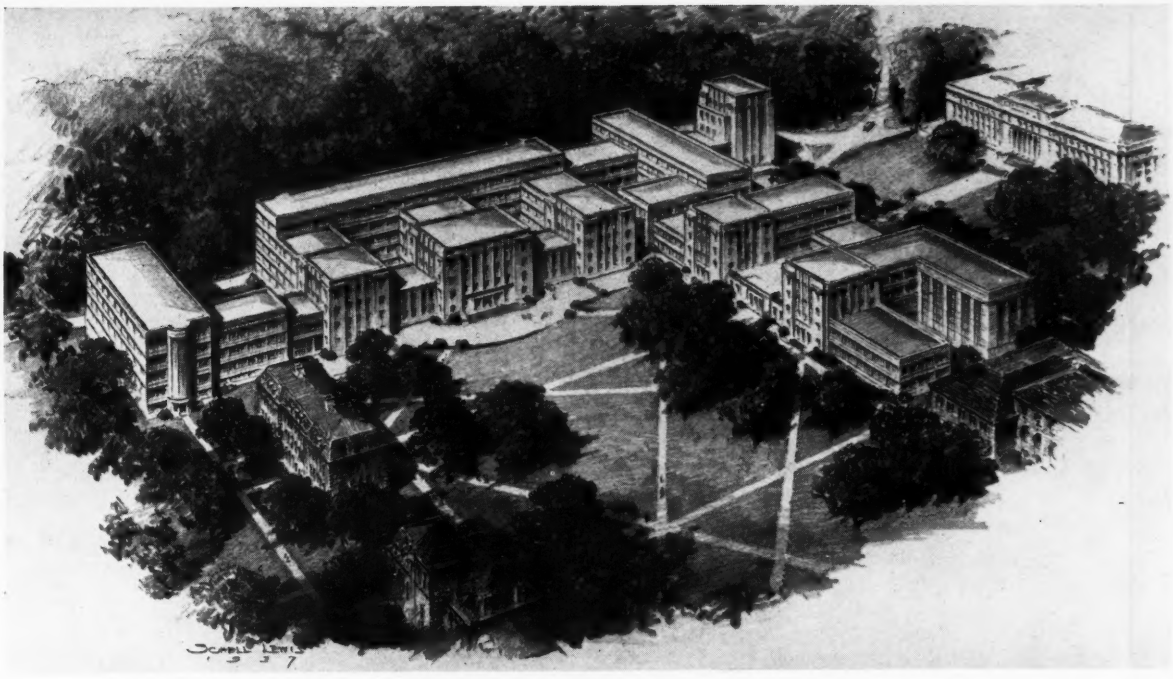
The drawing below shows how the Chemical Engineering Building (17) could be constructed without disturbing any of the present structures and how the Materials and Metallurgy Laboratory (8) would displace the old Sibley Mechanical Laboratories.

It is planned to move University Avenue to the edge of the gorge, giving the opportunity to landscape some ground between the road and the north front of the building. (See the drawing on the cover.)



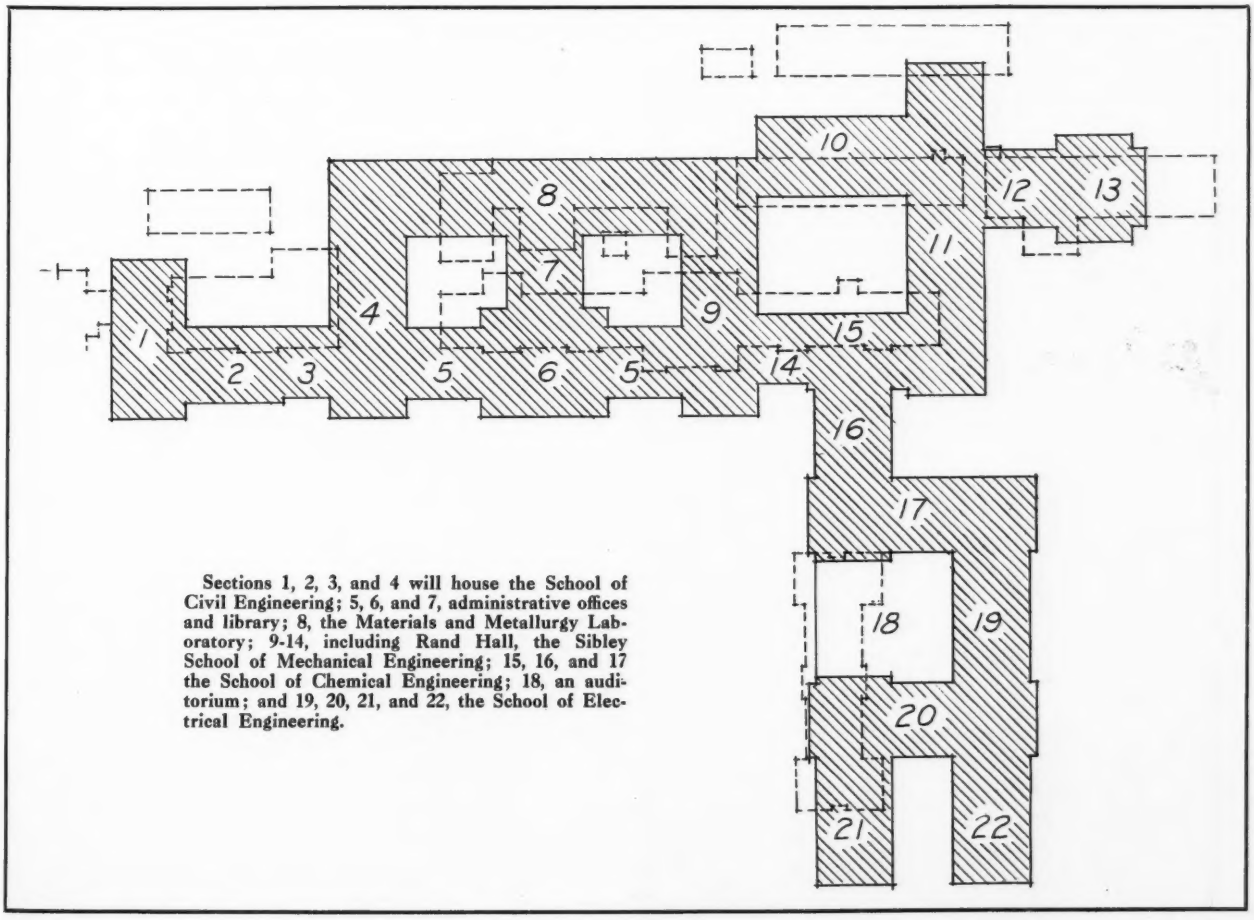
The New Materials and Metallurgy Laboratory (8) will perform the functions of the present Mechanical Laboratories (indicated by broken lines) and the foundry and highway materials laboratory (above, right) across the road to the north on the edge of the gorge, and will also have space for expansion of facilities for civil, mechanical, and electrical engineering.

ROPOSED
GINEERING
UILDINGS

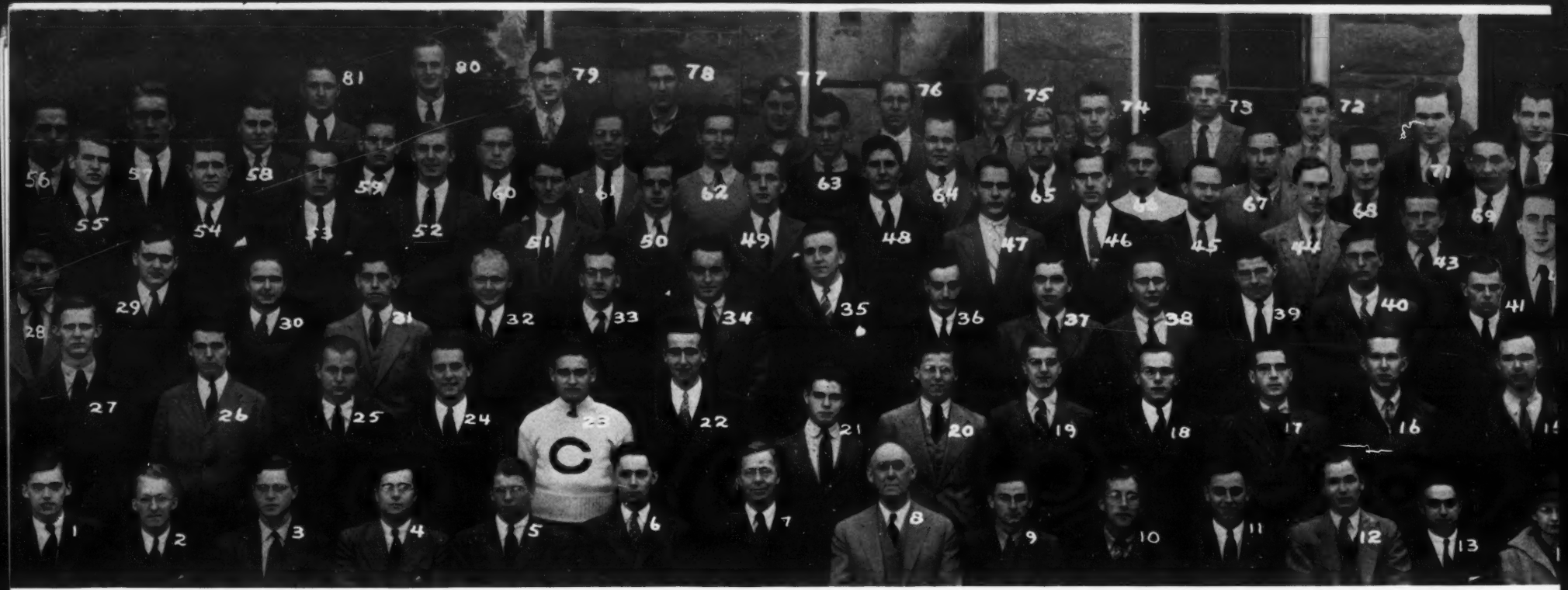


Architectural drawings by Shreve, Lamb, and Harmon

THE LONG-TIME plan of strengthening the College of Engineering contemplates the eventual erection of the entire group of buildings shown on this page. Above is a general view from the south. The floor plan below shows how the new units (shaded) will be placed in relation to present buildings (outlined in broken lines).



Sections 1, 2, 3, and 4 will house the School of Civil Engineering; 5, 6, and 7, administrative offices and library; 8, the Materials and Metallurgy Laboratory; 9-14, including Rand Hall, the Sibley School of Mechanical Engineering; 15, 16, and 17 the School of Chemical Engineering; 18, an auditorium; and 19, 20, 21, and 22, the School of Electrical Engineering.



Senior Class 1939, Sibley School of Mechanical Engineering, Cornell University

1 Reese, F.D. Cortland, N.Y. (A.E.)
2 Kellogg, R.C. Ithaca, N.Y. (A.E.)
3 Fineberg, G.J. Newburgh, N.Y. (A.E.)
4 Flanigan, W.P. Baltimore, Md. (A.E.)
5 Keasbey, A.P. New York City (A.E.)
6 Price, P.M. Ithaca, N.Y. (A.E.)
7 Hollister, S.C. (Dean)
8 Barnard, W.N. (Director)
9 Ehrhart, G.W. Niagara Falls, N.Y. (M.E.)
10 Smith, R.G. Livonia, N.Y. (M.E.)
11 Zouck, E.A. Baltimore, Md. (M.E.)
12 Midgley, T. Worthington, O. (M.E.)
13 Martinez, S.M. Mexico City (M.E.)
14 Knowles, J.B. Richmond, Ind. (M.E.)
15 Jaeger, C.F. Mt. Vernon, N.Y. (M.E.)
16 Peschko, D.S. Danbury, Conn. (M.E.)
17 Lewis, W.G. Massena, N.Y. (M.E.)
18 Moeller, E.G. Waterbury, Conn. (M.E.)
19 Simonson, J.W. Glen Head, L.I. (M.E.)
20 Benjamin, R. New York City (M.E.)
21 Sevin, M.P. Forest Hills, L.I. (M.E.)
22 Patterson, F.S. Freeport, L.I. (A.E.)
23 Gannett, J.D. Brooklyn, N.Y. (A.E.)
24 Halladay, W.B. Watertown, N.Y. (A.E.)
25 Tone, J.W. St. Clair, Mich. (A.E.)
26 Griffin, J.P. Erie, Pa. (A.E.)
27 Reimers, F.F. Hammond, La. (M.E.)
28 Rose, G.W. Montclair, N.J. (A.E.)
29 Weigel, B Chattanooga, Tenn. (A.E.)
30 Blackburn, D.B. Park Ridge, N.J. (A.E.)
31 Jeffers, H. Trumansburg, N.Y. (A.E.)
32 Munschauer, E.A. Buffalo, N.Y. (A.E.)
33 Weaver, H.C. Carlisle, Pa. (A.E.)
34 Spicer, E.F. Schenectady, N.Y. (A.E.)
35 Sands, B.H. Washington, D.C. (A.E.)
36 Porter, F.R. Southampton, N.Y. (M.E.)
37 Maggs, L.A. Niagara Falls, N.Y. (M.E.)
38 Grotzinger, J.H. Cuyahoga Falls, O. (M.E.)
39 Setright, J. Syracuse, N.Y. (M.E.)
40 Burrows, W.F. Cleveland, O. (M.E.)
41 Langhammer, W. Springfield, Mass. (M.E.)
42 Carrier, G.F. Millinocket, Me. (M.E.)
43 Thomas, F.H. Webster, N.Y. (M.E.)
44 Harding, W.L. Rochester, N.Y. (M.E.)
45 Ticknor, R.G. Ithaca, N.Y. (M.E.)
46 Jeffrey, G. New York City (M.E.)
47 Fischer, U. Philadelphia, Pa. (A.E.)
48 Upson, J. Arcade, N.Y. (M.E.)
49 Wagner, N.F. Watsontown, Pa. (A.E.)
50 Twitchell, P.G. Richmond, Va. (A.E.)
51 Sampson, M.W. Ithaca, N.Y. (A.E.)
52 Gerhauser, M.F. Chagrin Falls, O. (A.E.)
53 Chandler, W.C. Brooklyn, N.Y. (A.E.)
54 McMullen, G.R. Joplin, Mo. (A.E.)
55 Sadler, K.B. Cleveland, O. (A.E.)
56 Oswald, E.R. Brooklyn, N.Y. (A.E.)
57 Davis, A.R. S. Euclid, O. (A.E.)
58 Allen, H.M. Cleveland, O. (A.E.)
59 Mann, R. Pittsburgh, Pa. (A.E.)
60 Johns, W.H. Great Neck, N.Y. (A.E.)
61 Nevius, J.H. Flemington, N.J. (A.E.)
62 Hall, C.M. Dayton, O. (M.E.)
63 Betzer, C.L. Newfield, N.Y. (M.E.)
64 Mills, W.T. Rome, N.Y. (M.E.)
65 Noyes, J. Montclair, N.J. (M.E.)
66 Waring, D.B. Ithaca, N.Y. (M.E.)
67 Setz, H.L. Syracuse, N.Y. (M.E.)
68 Wilder, J.J. Rochester, N.Y. (M.E.)
69 Mitsui, H. Tokio, Japan (M.E.)
70 Dorius, N.E. Casper, Wyo. (M.E.)
71 Batchelar, E.C. Pittsburgh, Pa. (A.E.)
72 Heyward, R.B. Pittsburgh, Pa. (M.E.)
73 Davis, C.R. Scarsdale, N.Y. (M.E.)
74 Boak, T.I.S. New Haven, Conn. (M.E.)
75 Babson, J.R. Syracuse, N.Y. (M.E.)
76 McLellan, J.M. Short Hills, N.J. (M.E.)
77 Martindale, R. Middletown, O. (M.E.)
78 Heckel, E.P. Park Ridge, Ill. (M.E.)
79 Bracht, P.F. Seneca Falls, N.Y. (M.E.)
80 McCarty, R. Webster Groves, Mo. (A.E.)
81 Smith, N.H. Elmira, N. Y. (A.E.)

58 Allen, H.M.
75 Babson, J.R.
8 Barnard, W.N.
71 Batchelar, E.C.
20 Benjamin, R.
63 Betzer, C.L.
30 Blackburn, D.B.
74 Boak, T.I.S.
79 Bracht, P.F.
40 Burrows, W.F.
42 Carrier, G.F.
53 Chandler, W.C.
57 Davis, A.R.
73 Davis, C.R.
70 Dorius, N.E.
9 Ehrhart, G.W.
3 Fineberg, G.J.
47 Fischer, U.
4 Flanigan, W.P.
23 Gannett, J.D.
52 Gerhauser, M.F.
26 Griffin, J.P.
38 Grotzinger, J.H.
62 Hall, C.M.
24 Halladay, W.B.
44 Harding, W.L.
78 Heckel, E.P.

72 Heyward, R.B.
7 Hollister, S.C.
15 Jaeger, C.F.
31 Jeffers, H.
46 Jeffrey, G.
60 Johns, W.H.
5 Keasbey, A.P.
2 Kellogg, R.C.
14 Knowles, J.M.
41 Langhammer, W.
17 Lewis, W.G.
80 McCarty, R.
76 McLellan, J.M.
54 McMullen, G.R.
37 Maggs, L.A.
59 Mann, R.
77 Martindale, R.
13 Martinez, S.M.
12 Midgley, T.
64 Mills, W.T.
69 Mitsui, H.
18 Moeller, E.G.
32 Munschauer, E.A.
61 Nevius, J.H.
65 Noyes, J.
56 Oswald, E.R.
22 Patterson, F.S.

16 Peschko, D.S.
36 Porter, F.R.
6 Price, P.M.
27 Reimers, F.F.
28 Rose, G.W.
1 Reese, F.D.
55 Sadler, K.B.
51 Sampson M.W.
35 Sands, B.H.
39 Setright, J.
67 Setz, H.L.
21 Sevin, M.P.
19 Simonson, J.W.
81 Smith, N.H.
10 Smith, R.G.
34 Spicer, E.F.
43 Thomas, F.H.
45 Ticknor, R.G.
25 Tone, J.W.
50 Twichell, R.G.
48 Upson, J.
49 Wagner, N.F.
66 Waring, D.B.
33 Weaver, H.C.
29 Weigel, B.
68 Wilder, J.J.
11 Zouck, E.A.

CORNELL SOCIETY of ENGINEERS

"The objects of this Society are to promote the welfare of the College of Engineering at Cornell University, its graduates and former students and to establish a closer relationship between the college and the alumni."

President's Column

Fellow Engineers:

There are two main thoughts that I wish to bring before you in this letter, the first one having to do with the theme of the present issue of THE CORNELL ENGINEER, and the second with the formation in Pittsburgh last month of the first regional group of the society.

It has been my privilege to have long had a close knowledge of the problems facing those in charge of the College of Engineering. Lack of funds to pay salaries to the teaching staff commensurate with the duties performed; lack of adequate equipment, lack of buildings, all created a situation of serious consequences if allowed to continue. That the situation is fully recognized and is being as fully acted upon as is possible at the moment is demonstrated by the plans which were presented before the society at the November 10 meeting.

—Courtesy Alumni News
PAUL O. REYNEAU '13, *Sec'y.-Treas.*

I believe we should all feel very much encouraged in the action of the Board of Trustees, President Day, and Dean Hollister as outlined at the meeting. Certainly a long step has been taken toward continuing at Cornell a position of eminence in engineering education.

Mr. Bancroft Gherardi informs me that he hopes it will be possible to arrange for similar meetings in other sections and efforts will no doubt be made to that end.

It is a great pleasure to announce the formation of the Pittsburgh regional group of the society and I wish to extend to Furman South and his associates our congratulations. Those residing in the Pittsburgh area have always taken a deep interest in the affairs of the college. Their interest can now be brought closer. Mr. South is a vice-president of the society and with him are:

Arthur C. Amsler
Walter S. Crawbuck
R. H. Flinn
K. W. Gass
Charles J. Howell
Charles F. Kells
Thomas C. McDermott
John W. Todd, Jr.

As Christmas time is not far off I wish to take this opportunity to extend to you the felicitations of the season.

Very sincerely yours,

WALKER L. CISLER,
President.

Copies of *Engineering at Cornell*, the illustrated brochure published by the College last spring for distribution to prospective students, are available again to alumni who wish to present them to secondary school students interested in engineering. As many alumni already know, the brochure is profusely illustrated, with reading matter specially designed to answer the general questions a high school boy wants to know about a university.

Alumni in the New York area will find a supply of the brochures at the desk of Paul Reyneau '13 in the Cornell Club of New York, now in the Barclay Hotel. Copies will be mailed promptly to any part of the world in response to requests addressed to Dean S. C. Hollister in Ithaca. In writing, please give the name and address of the prospective student, even though the brochure is to be presented personally.

NEWS OF THE ALUMNI

'99 ME; '09; '14 Ph.D.—Frank M. Farmer, vice-president and chief engineer of the Electrical Testing Laboratories, New York City, has been re-elected for a third term as chairman of the Engineering Foundation, research organization of major national engineering societies. John H. R. Arms '09 has been elected secretary, and Oliver E. Buckley, Ph.D. '14, a member of the Foundation board.

●

'06 ME.—Carlos D. Hart, prominent Western Electric official, was elected to Tau Beta Pi in the recent fall elections. Mr. Hart's career in Western Electric began on his graduation, when he went to work at the Hawthorne Works near Chicago. When the company built its Kearny works, he was put in charge of construction, and was made General Manager upon completion of the plant. He was also put in charge of the construction of the Point Breeze plant near Baltimore, and at present is General Manager of the plant.

Mr. Hart's ability was not rewarded with election to the honor society during his undergraduate days because there was no chapter of the society at Cornell at the time.

●

'07 ME; '92 ME; '93 MME; '96 ME—William P. Gruner writes, "During the past two years I have been interested in the development of two companies, the most recent of which is Mid-West Coolers, Inc., of St. Louis, Mo. To enter it, I have resigned from the Mutual Bank as vice-president, still retaining my directorship in the bank. This new company will have as chairman of the board A. H. Timmerman '92, first vice-president of the Wagner Electric Corporation; I, as executive vice-president; and Ralph McCarty '96, vice-president in charge of production. So you can see that it has taken on the aspects of a Cornell organization. This new development has to do with the cooler or low pressure side of refrigeration and takes over some exceedingly valuable patents which have just been issued to a refrigeration engineer of this city." Gruner's address is % the Mutual Bank and Trust Company, 716 Locust Street, St. Louis.

'14, '15 ME—Edward R. Guyer, vice-president of Cribben and Sexton, Chicago, Ill., was elected president of the Association of Gas Appliance and Equipment Manufacturers, at the society's annual meeting, held in Atlantic City, N. J., early in October.

'23 MEE., '27 EE.—Orla Wood, '23 MEE, Lewis Koller, '31 AB-PhD, Theodore Dickinson, '27 EE were recently granted patents by the U. S. Government. Wood was granted a patent on a Liquid Purification Apparatus; Koller one on a Photoelectric Device; and Dickinson one on an Electric Valve Circuit. The patents were assigned to General Electric. The three men are located at Schenectady, N. Y.

'24 ME—Allan H. Morgensen, is one of the leaders in the comparatively recent field of motion study. His interest dates back to 1924, when he realized the tremendous possibilities of work in this field in the elimination of wasted time and effort in industry. His studies, aided by special motion picture apparatus, have gained him an important position in the field.

Since 1930, Mr. Morgensen has been a member of the editorial staff of FACTORY. He is the author of "Common Sense Applied to Motion and Time Study" and of numerous papers published in technical magazines, both in this country and abroad.

All his time since 1932 has been devoted to conducting training courses in Work Simplification. In this time he has held conferences and meetings in regular schedule with over 5,000 foremen, supervisors, time study engineers, executives, and department heads. As a result of the courses and many talks given before foremen's clubs, many plants other than ones he has actually served have started Work Simplification programs. His efforts have resulted in a tremendous interest in a subject that only eight years ago was regarded by most industrialists as too theoretical for their use.

For this "distinguished contribution to management," Mr. Morgensen was awarded the Gilbreth medal in December, 1937.

This summer, to meet the demand for instruction in this subject, Mr. Morgensen conducted his second Work Simplification conference at the Lake Placid Club, N. Y. from July 11 to August 20.

The object of the conference was to train a man from an organization interested in efficient plant operation to set up and run a Work Simplification program in his own plant. Enrollment was limited to 25 men so that individual problems could be discussed, and only one man from any company was accepted. All companies represented were non-competing.

"Before and After" movies were studied by the group, and special projects were analyzed by laboratory groups. The mornings were reserved for discussion and instruction while afternoons were kept free for recreation and informal discussion. Evenings were spent in a well-equipped laboratory.

Every delegate was expected to bring with him an actual problem from his company. It is interesting to note that some of the men attending the 1937 conference more than paid for the entire course through savings realized from the solution of their problem.

At the recent International Management Congress one of Mr. Morgensen's papers was included in those on Production.

(*Continued on page* 24)

...for your benefit

Relentlessly a mechanical mouth at Bell Telephone Laboratories keeps talking . . . talking . . . talking into this new type telephone. Other telephones are being frozen, steamed, baked, lifted and dropped into their cradles by machines.

Why all these laboratory tortures? Simply because your telephone must *prove* it can take more use and abuse than it will ever get in its normal lifetime. It must be ready to give you the best possible telephone service.

Exhaustive testing of Bell System apparatus is one reason you can depend on your telephone *always*.

BELL TELEPHONE SYSTEM

Why not telephone home oftener? Rates to most points are lowest after 7 P. M. and all day Sunday.

WITH THE

CHEMICAL ENGINEERS MEET

Director F. H. Rhodes and Professors C. C. Winding and O. J. Swenson, of the School of Chemical Engineering, attended the meeting of the American Institute of Chemical Engineers in Philadelphia November 9-11, where Professor Rhodes delivered a paper on "Heat Transfer to Boiling Liquids."

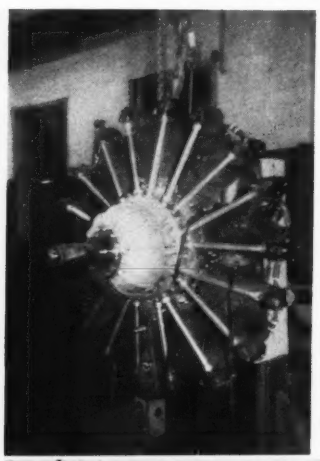
The Cornell Student Branch of the Institute was organized for the current year at a meeting of 75 chemical engineering students recently. Speakers were Dean S. C. Hollister of the College of Engineering and Professor W. K. Stone of the College of Architecture. President of the student branch is K. J. Nelson '39.

•

AIRCRAFT ENGINE AND M. E. LIBRARY

As we mentioned in the October and November issues of the Cornell Engineer, during the summer and autumn months the facilities of the College of Engineering were improved by the installation of new equipment and the remodeling of parts of the various buildings.

Below are two pictures which show a part of the work which was done. The upper picture is of the new Pratt and Whitney. Wasp, 600-horsepower, radial, aircooled, aircraft engine which was recently installed in the West Mechanical Laboratory.



The new aircraft engine in the west Mechanical Lab.

The lower picture is a view of a part of the relocated Mechanical Engineering library, which is now in Sibley Dome in place of the assembly room which formerly was there. The new library provides fireproof storage of books, a large, well-lighted reading room, and space for exhibits.

The new M.E. Library in Sibley Dome

DEAN KIMBALL SPEAKS

Dean Emeritus Dexter S. Kimball is far from inactive in present-day Cornell affairs; this fact is apparent from the two interesting lectures he has presented during the past month.

On Friday, November 11, Dean Kimball addressed seniors in the Schools of Mechanical and Electrical Engineering on "The Casting of Famous Bronzes". This constituted one of the regular senior non-resident lectures.

Dean Kimball has been interested in the non-resident lecture course since its inception, and is a regular annual lecturer in the series. Since his retirement, he has traveled widely and gained a thorough first-hand knowledge of present-day industrial problems, supplementing his many years of study in this field.

In this interesting lecture Dean Kimball discussed various ways and means of making bronze castings, as illustrated by famous statutes, church doors, and other works of art. He illustrated with lantern slides of works by Chiberti, Cellini, Donatello, Peter Vischer, and others.

Some of the great early bronze castings were made, he said, by the ordinary foundry process of making a pattern, packing sand around it, removing the pattern, and pouring in the metal. The results were solid objects sometimes weighing, like the Colossus of Rhodes, as much as 300 tons.

A second method is to make a clay model, coat it with a thin layer of wax, surround the wax with a layer of heated clay which melts the wax, and then pour in the metal. This process produces thin shells, and is the one used by the ancient Egyptians and Chinese. It was also prevalent in Greece and Rome during the renaissance, when numerous equestrian statues were cast that way.

The third and final method is more complicated, involving a clay model, surrounded by plaster of Paris cut into blocks so that the shell can be taken apart in sections, waxed on the inside, and relined with a different type of core before the metal is poured.

All three methods were discussed in some detail, and their salient features pointed out. The lantern slides provided an interesting addition to the lecture.

•

TRENDS OF INDUSTRY

On Friday, November 4, L. W. W. Morrow '11, general manager of the fibre products division of the Corning Glass Works, gave a valuable lecture to seniors in the Sibley School of Mechanical Engineering and the School of Electrical Engineering.

"Trends of Industry as Affecting Engineers" was the subject. Morrow's experience as editor of the Electrical World and as teacher at Cornell, the University of Oklahoma, and Yale, as well as practicing engineer and executive, has given him special qualifications to discuss this general question.

AT THE END OF

ENGINEERS

LIGHT ON THE SUBJECT

A thorough exposure of the false claims made for so-called "scientific" lighting devices, which are supposed to do everything from saving money to killing bedbugs, was made in Franklin Hall on Friday, Nov. 18, by A. L. Powell, supervising engineer of the Incandescent Lamp Department of the General Electric Company. He demonstrated, for instance, that most of the devices advertised as eliminating glare from automobile headlights merely cut down the effective candlepower, so that the same result could be obtained by using a weaker bulb.

He also analyzed numerous reflectors and queerly shaped lighting fixtures that sell for high prices. Most of the reflectors merely make a "hot spot" at the bottom of the globe, a result easily obtained by merely lowering the bulb. He advised housewives to buy only standard fixtures of simple design produced by reputable manufacturers.

Concerning bulbs themselves, he said the buyer should always consider five factors: watts, candlepower, life, cost, and maintenance of candlepower. Extremely long life in a bulb means that the bulb has been using too much power; it was inefficient in the first place, and has been steadily losing efficiency with age. "The actual cost of the bulb," he said, "is a relatively unimportant factor. The real cost lies in the amount of current consumed. The standard household bulb, with a life of about 750 hours, is the most efficient and economical that science can now produce."

●

FOUNDRYMEN CONFER

A regional Foundry Conference, similar to the one which drew more than 200 delegates to Ithaca last year, was held on the Cornell University campus November 25 and 26 under the auspices of the Buffalo Chapter of the American Foundrymen's Association, the Syracuse Foundrymen's Association, and the College of Engineering at Cornell.

Speakers included R. E. Kennedy and H. B. Hanley, secretary and director, respectively, of the American Foundrymen's Association; Dean S. C. Hollister and Dean Emeritus Dexter S. Kimball of the College of Engineering; and technical experts on such topics as malleable iron, gates and risers, dust hazards, cupola practice, steel castings, sand control problems, and elementary metallurgy.

J. A. Voss, director of industrial relations for the Republic Steel Corporation of Cleveland, delivered the principal address at the conference banquet Thursday evening. Toastmaster was Marshall Post, president of the American Foundrymen's Association.

Members of the conference committee were Chairman H. B. Hanley of Rochester, M. W. Pohlman and R. K. Glass of Buffalo, H. H. Judson and J. L. Lonergan of Syracuse, and Professor A C. Davis of the College of Engineering.

RECOMMENDATIONS FOR CONTINUED GROWTH

Periodic change, periodic checks, and periodic sprees were recommended to senior engineers at Cornell by Professor F. A. Magoun of M.I.T. as methods of keeping out of the ruts of stagnation. Prof. Magoun is one of the country's foremost authorities on relations in business and industrial management. In a speech given Friday, Nov. 18, he defined stagnation as a condition in which habits are so strong that change is impossible. "And when growth stops," he asserted, "death begins."

By periodic change, he said he means exposing oneself to new events and points of view. "Read one good book a month," he advised. "Learn to write. Keep on studying. Join groups of people with dissimilar interests."

By periodic check he explained he meant making a personal inventory at regular intervals, perhaps once a year. "Put down your profits and losses during the past year," he advised. "How many friends have you won? How many books have you read? Have you failed to make friends or keep up with events? Write down your problems and dilemmas and study them. Check your physical health. Then make a budget for the coming year of things you ought to do and want to do."

In discussing sprees, he was careful to say that he meant worthwhile methods of relaxation that leave no headaches. "Go fishing, read poetry, climb a mountain, chop down trees," he suggested. "Anything that prevents stagnation helps education, because education is the development of a system of habits for growth."

The reaction of the senior group to this lecture was so enthusiastic it brought forth a post lecture treat by Prof. Magoun.

●

KAPPA TAU CHI ELECTIONS

At a meeting on Thursday, December 1, Kappa Tau Chi honorary society elected six new members from the students in Administrative Engineering. President Fred Reimers announced the elected men as follows: Wright Bronson, Jr.; Allyn R. Marsh, Jr.; Henry M. Rose; Sidney L. Scott; William H. Worcester; of the class of '40, and W. Harry Johns, Jr., of the class of '39.

●

NEW CHRISTMAS SUBSCRIPTION OFFER

Because of widespread interest in this issue's accounts of the proposed engineering buildings, the Cornell Engineer announces that a special Christmas subscription offer covering the issues December 1938 to May 1939, inclusive, will be in effect until December 24. The price is for Ithaca addresses only, $.75 for the six issues.

(*Continued on page* 24)

Do You Know These Men?

JOSEPH MIDDLETON STEELE II, CE '39

A bit unusual for an engineer, biology, music, and literature are the principal hobbies of Joe Steele. He is following family precedent in his choice of career, as his father is also a civil engineer, having received his degree at the University of Pennsylvania.

Joe hails from Chestnut Hill, Philadelphia where he attended the William Penn Charter School in preparation for Cornell.

During his four years at Cornell, Joe has combined scholarship and extra-curricular activities, as his record shows. For four years he has been on the Honor Committee of the Civil Engineering School. He was chairman of the committee in his senior year. He is also president of Chi Epsilon, honor society in Civil Engineering, a member of Pyramid, and of Tau Beta Pi. Besides this, Joe is the president of his fraternity, Delta Phi.

Joe believes in seeing different parts of the country during the summer. He spent his freshman summer on a South American cruise and was in Maine last summer. The summer of his sophomore year he did construction work in Amber, Pennsylvania.

After graduation, Joe expects to enter the design field which he hopes will lead to administrative work of some sort.

If one should judge by his college career, it seems apparent that Joe will be successful in whatever specific endeavor he attempts. His scholastic record, besides bringing him honor, is evidence of his ability to handle technical work, while the many and varied responsibilities he has assumed at Cornell have trained him for greater responsibilities in the future.

ALBERT REES DAVIS II, A.E.M.E. '39

"Bud" Davis certainly believes in taking every advantage of the various extra-curricular activities at Cornell. He has won his letter in track through his pole vaulting ability and is a member of the Spiked Shoe. Bud is also house manager of his fraternity. Psi Upsilon; president of Tau Beta Pi; member of Sphinx Head, Sigma Delta Chi, Kappa Tau Chi, Scabbard and Blade, and Glee Club. He is on the board of the Cornell Almanac and a member of the '39 Ice Carnival Committee.

Bud is a native of Cleveland, Ohio and attended the University School in Cleveland in preparation for Cornell. During the time that he has attended the University, Bud has held a McMullen scholarship for one year and a Redmund Stephen Colnon scholarship for a period of two years.

During the summer vacations Bud has been working in a summer camp as a counselor. He likes the work, the outside life, and the association with other boys. His hobby is traveling. He finds it interesting and educational as well as lots of fun. Last summer he spent quite a bit of time touring the country with other fellows. When interviewed, he had just returned from a trip to California. He flew both ways to a Scabbard and Blade meeting on the coast and made the whole trip in less than a week.

Bud plans to join his father in the insurance business when he graduates. He feels that he made no error in taking an engineering course, however, and believes that an engineering course is good training for almost any field. Bud surely has obtained the utmost out of his years at Cornell and is certain to make a success of whatever he goes into in the future.

College News

(*Continued from page* 21)

METROPOLITAN WATER SUPPLY DISCUSSED

The highly complex problem of supplying water to the metropolitan areas of New York, Philadelphia, and northern New Jersey was discussed and illustrated by maps and lantern slides Friday evening, November 14 by Howard T. Critchlow '10, chief engineer of the New Jersey State Water Power Commission, before a joint meeting of the Cornell Student Branch and Ithaca Section of the American Society of Civil Engineers. The Delaware River Basin has become a focal point for such discussion, he said, because New York City has nearly reached the limit that can be taken from the tributaries of the Hudson River.

New York now uses approximately 1,000 million gallons per day. New Jersey, using approximately 300 M.G.D., has also nearly reached the limit of supply and is looking toward the Delaware, which, though supplying 330 M.G.D. to Philadelphia, is relatively untapped. Mr. Critchlow described a $270,000,000 project now under way to take water from the upper tributaries of the Delaware on the western slope of the Catskill Mountains, for the use of New York City. The project, when completed, he said, will add 540 M.G.D. An equal amount may be diverted to New Jersey if plans now contemplated are carried out.

Alumni News

(*Continued from page* 18)

'31 CE.—Edwin A. Courtney is an engineer and scout for the Fohs Oil Company in southeastern Louisiana. He writes: "We are having an interesting time drilling deep holes in the coastal marsh country of southeastern Louisiana. We have drilled one to 13,409 feet and another to 13,333 feet; the latter is producing from a 13,266 foot depth, being the world's deepest producing horizon to date. If any Cornell engineers or chemists wish to study hydrocarbons under pressures up to 5000 pounds per square inch, we can furnish a full scale laboratory. We have also obtained much geological material that is interesting." His address is Box 121, Houma, La.

'32 ME; '37 BS—Erik B. J. Roos married Margaret S. Douglas October 10 in the Persian Embassy in Bagdad. Mrs. Roos sailed from the United States in September and was joined in Naples by Paul Knabenshue, minister to Iraq, and Mrs. Knabenshue, who accompanied her to Beirut. She was there the guest of D. C. M. Brooks, who is in charge of the Bagdad branch of the Carrier Engineering Corporation. Roos has been in Bagdad two years with Carrier, and he and Mrs. Roos will be there for two years longer, after which they are expected in the United States on a six months' furlough. Their address is 621 Rekheita, Karrada, Bagdad, Iraq.

'32 AB; '09 CE—Richard H. Sampson is associated with Newton C. Farr '09 in the Farr Company, real estate, Chicago, Ill. He was a member of the committee for the Cornell Alumni Corporation convention. He lives at 5635 Dorchester Street, Chicago; has "two comparatively new daughters, Barbara Edgeley Sampson, born March 4, 1937, and Deborah Chandlee Sampson, born April 30, 1938."

'35 ME—Kenneth F. Woehr is engaged to Doris J. Tenney, of Poughkeepsie, a 1936 graduate of Vassar College. He lives at 505 Augustine Street, Rochester.

'35 ME—Eugene F. Murphy, Jr. is in the engineering department of the Ingersoll-Rand Company and lives at the Imperial Club, Painted Post. He is vice-chairman of the Ithaca section of the American Society of Mechanical Engineers and was its delegate to a group meeting in Philadelphia, Pa., October 29-30.

'35 ME—Frederick W. Weisenbach sailed October 15 for Sao Paulo, Brazil, to take a position as an engineer engaged in the laying out and construction of air-conditioning plants and other applications of refrigerating apparatus. His mailing address is % Byington and Company, Sao Paulo, Brazil.

'35 EE.—V. Larry Dzwonczyk is an electrical engineer with the American Gas and Electric Service Corporation; he lives at 343 East Sixty-seventh Street, New York City. He writes: "In order to preserve the investment in higher education that A. Roy Longenecker '35 and I have made, both of us are attending the Polytechnic Institute of Brooklyn. We hope to absorb enough knowledge of our expanding profession so that we will keep up with the times and, also, call ourselves 'Masters'. As a matter of interest to the '35 EE's, I take pleasure in assuming a Walter Winchell role—Roy has a daughter. To send congratulations, address him at 55 Knickerbocker Road, Manhasset."

ARCHITECTURE OF THE PROPOSED GROUP

(*Continued from page* 13)

time between now and that future. Uses or methods of teaching or courses of study or research which we do not now foresee can be more easily dealt with in a space that has an interchangeability or flexibility rather than in rooms fixed and limited to definite purposes.

Instead of retaining just the twenty-foot bays, we could, if desired, so construct this internal framing that the cross-section of sixty feet from wall to wall could be a central corridor with classrooms on either side, or we could combine one classroom and that corridor to make a wider room and over on the other side where the second classroom group would have been, we could throw in a corridor and a less deep room which would be for limited research work or for administrative offices or for special teaching purposes. Or, instead, we can add to that again a shop which would extend through several floors in height. The materials testing laboratory would be of that type. Within the building there would thus be flexibility of use transversely and flexibility of use along the front. For that reason the ends of the buildings nearest the Quadrangle have been treated as of the character of the other Quadrangle buildings, with an arrangement of stories and an arrangement of fenestration that is in character with these buildings, whereas, on the far side and in the bars of the "E" we have put what we call "ribbon" windows, that is, a continuous fenestration. This would, as changes were wanted from time to time, permit free movement of the partitions within.

The study has been one, as I said at the beginning, to fix a plan which conforms to the requirements as to number of students, as to functions to be housed, as to the area within which we have to work, and as to the surroundings which would influence the form and character of the buildings that we are going to build.

The schools would develop as a matter of replacement of existing structures by new structures, and the plans permit the erection almost with entire freedom of whatever element may first be available as funds are contributed. If one, two, three, four, or five are built in whatever order, the adaptation of this plan to the existing conditions will be possible, and completion of the final plan within the scope and general form of this would also be possible without having to depart widely from anything, as we now look at it, that we have set up.

I want, however, to make it clear that there is no frozen program here, and that this plan is a scheme which has so far met the approval, fortunately, of the Faculty, the Advisory Committee of Architects, the Building and Grounds Committee and the Trustees. I have great hope of living long enough to have the opportunity of seeing it executed.

Do You These

PROFESSOR S. L. BOOTHROYD

Many of the freshmen at Cornell are somewhat startled as they are puffing and panting their way up the hill to see a professor tear past them. He climbs the hills with effortless ease and in no time at all completely outdistances the young students. Upperclassmen could tell them that he is Professor S. L. Boothroyd of the astronomy department who makes a hobby of mountain climbing and hiking and who is one of the most interesting men on the faculty.

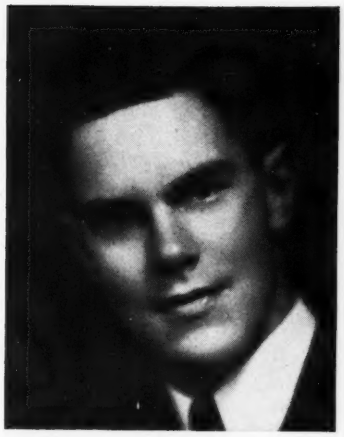
Professor Boothroyd was born near the small town of Loveland, Colorado, on a ranch owned by his father and mother, who were pioneers from England. There were very few public schools in Colorado in the 1880's and young Boothroyd obtained his early education from his mother and from a tutor. He spent only three years in the public schools before he entered Colorado State College where he took a course in Civil and Irrigation Engineering.

He was graduated in 1893 and his first job was as a city engineer in Fort Collins, Colorado, where he assisted in the installation of an underground sewer system.

It was while he was taking a graduate course at the University of Colorado that he developed his interest in astronomy. After teaching in a rural school for a year he returned again to college. This time it was the University of Chicago, where he studied advanced mathematics and astronomy.

Since that time his interests have been varied indeed. He has taught at Morris College, Belview College, Colorado State, and the University of Washington. He was associated with Dr. See at Lowell Observatory in the study of double star astronomy and was assistant astronomer and secretary at the observatory for a year. Between his other jobs he helped his father and brother raise purebred cattle.

Know Men ?



DEAN WALLACE, ME '40

Participation in extra-curricular activities and a high record in scholarship combine to make Dean Wallace an outstanding Junior in the Mechanical Engineering school. Though a third year man, he has already been elected to Tau Beta Pi, Atmos, and Red Key. Dean is also assistant manager of the frosh football team and a Junior member of the Freshman Advisory Committee.

Wallace hails from nearby Syracuse, although he attended Northwood Preparatory School at Lake Placid before coming to Cornell. While there, he played on the basketball team and captained the tennis team. The fact that he graduated with "Cum Laude" honors forecast his outstanding scholastic ability.

During the past two summers, Dean has been acquiring valuable experience working for his father, manufacturer of two-thirds of the pocket knives produced in the United States. Next summer he hopes to he promoted to the position of millwright; and when he leaves Cornell, he hopes to pursue metallurgical work.

We thought you would be interested in Dean Wallace as an outstanding member of the Junior class, while realizing that his record should be even more complete when he graduates.

In 1904 he came to Cornell for the first time and has been here most of the time since then. During this time he has been on two very interesting scientific expeditions: one, surveying with the Coast and Geodetic Survey, with whom he helped survey the Alaskan border; the other, in Arizona in the summer of 1933 testing aluminum mirrors as a means of obtaining ultra violet spectra for stars. He has also been in Arizona on an expedition for the systematic observation of meteors.

Stress and Strain

Sailor: "You aren't getting seasick, are you buddy?"
Recruit: "Not exactly, but I'd sure hate to yawn."

'''

"Do you know what happens to little boys that don't tell the truth?"
"No, what?"
"They grow up and become Mechanical Engineers."

—*North Dakota Engineer.*

'''

The Congressman's wife sat up in bed, a startled look on her face. "Jim," she whispered, "there's a robber in the house."
"Impossible," was her husband's reply. "In the Senate, yes, but in the House, never."

—*Penn Triangle.*

'''

"Here waiter, two orders of Spummoni Vericeglli please."
"Sorry sir, that is the proprietor."

'''

Ruth rode on my new cycle car,
On the seat in back of me.
I hit a bump at fifty-five
And rode on ruthlessly.

—*Harp.*

'''

Frosh Chem. Engineer (leaving Chem. Lab.): "What's that funny smell?"
Soph. Chem. Engineer: "That's fresh air, you sap."

—*Rose Technic.*

'''

And then there was the girl who was so dumb that she thought that VAT 69 was somebody's telephone number.

—*Oshkosh O'Gosh.*

'''

And the Germans named their ships after jokes so the English wouldn't see them.

—*Rose Technic.*

ATTENTION: SOPHOMORE BASICS

French Sentry: "Halt! Who goes there?"
Voice: "American."
French Sentry: "Advance and recite The Star Spangled Banner."
Voice: "I don't know it."
French Sentry: "Proceed, American."

—*Puppet.*

'''

"Com-pan-ee, Atten-shun!" bawled the drill sergeant to the rookie squad. "Com-pan-ee, lift your left leg and hold it straight out in front of you!"
By mistake, one soldier held up his right leg, which brought it side by side with his neighbor's left leg.
"Aw right," shouted the sergeant when he noticed this. "Who's the wise guy over there holding up both legs?"

—*Mad Hatter.*

'''

And then there was the ill-humored civil engineer that always built cross roads.

'''

And have you heard about the fellow who was the president of a suspender company. At every banquet he proposed a toast to the law of gravity.

—*Rose Technic.*

'''

Father (to infant son sucking his thumb): "Hey, boy, don't bite that thumb off. You may need it when you get old enough to travel."

'''

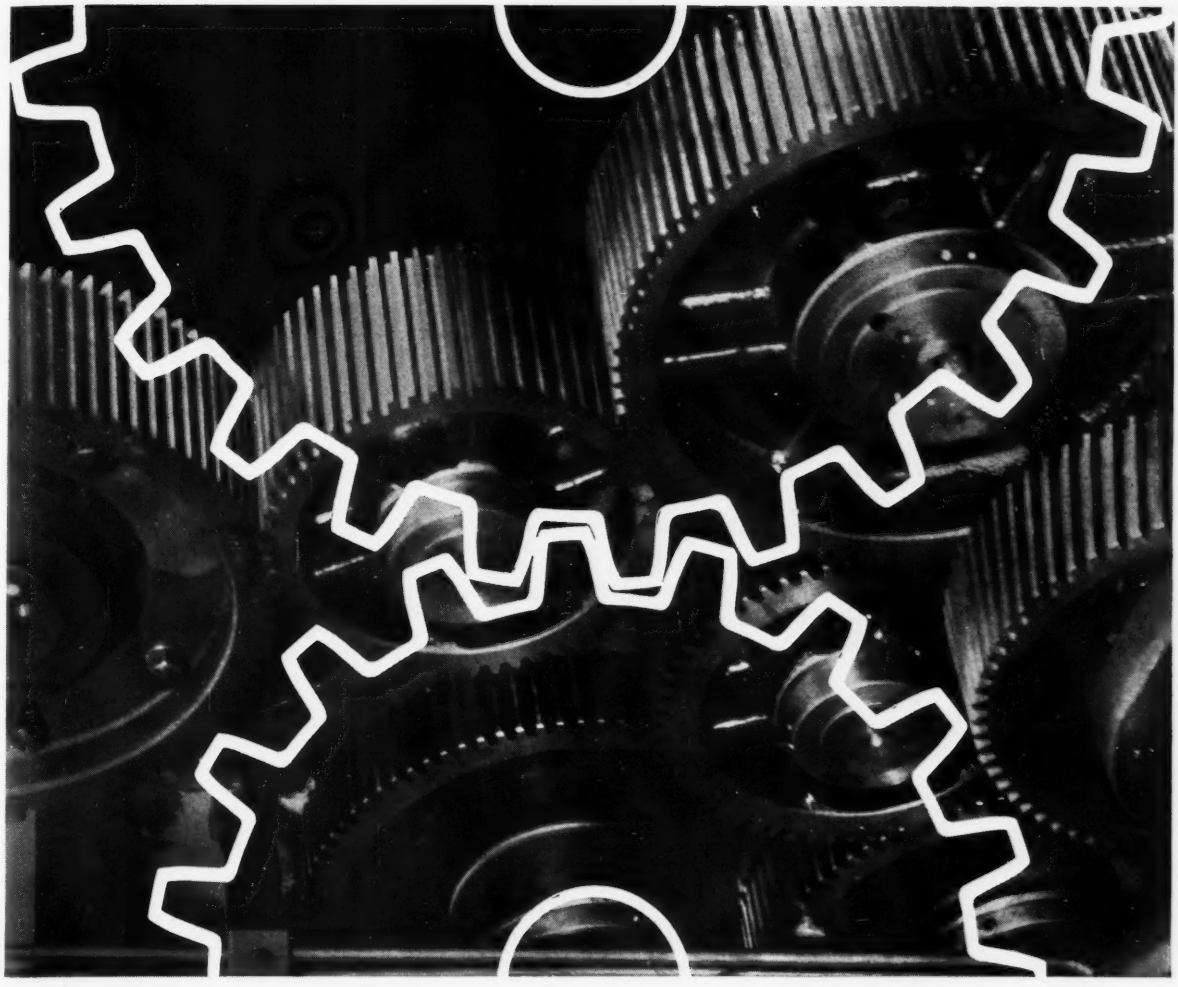
Prof: "You have been missing my classes for the past two weeks, haven't you?"
Senior: "Not in the least, sir, not in the least."

—*The Kansas Engineer.*

'''

Diner: "Here's a piece of rubber tire in my hash."
Waiter: "No doubt. The motor is replacing the horse everywhere."

—*Wayne Engineer.*



PRECISION GEARS AT LOW COST

THE quality of the gears in a high-grade machine tool determines its performance.

One well-known machine-tool builder finds 0.35% Moly Chrome-Molybdenum iron meeting all requirements for main and intermediate gears in an automatic crankshaft lathe. The iron is wear-resistant enough to assure maintenance of original tooth profiles, thus eliminating tool chatter. Its structure—and therefore its strength—is uniform. There is no trouble from porosity at the bases of the gear teeth. This Chrome-Moly iron also holds down production costs. It is comparatively inexpensive. It machines easily. And in the case referred to above there has never been any waste from defective castings since it has been adopted.

If resistance to wear, uniform strength, plus economical production are vital requisites in the gears, pulleys or similar machine parts you make or use, investigate Moly irons. Our book, ***"Molybdenum in Cast Iron,"*** is free to engineers and production executives. Climax Molybdenum Company, 500 Fifth Avenue, New York City.

PRODUCERS OF FERRO-MOLYBDENUM, CALCIUM MOLYBDATE AND MOLYBDENUM TRIOXIDE

Climax Mo-lyb-den-um Company

MOLY

G-E Campus News

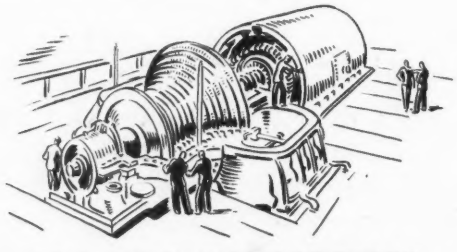
"PINHOLE DETECTOR"

COUNTING traffic, guarding jewels, opening doors—all are in the day's work for photoelectric relays.

But in a great rolling mill one is acting in the unusual role of pinhole detector, a role developed by General Electric at the suggestion of the Bethlehem Steel Company. As steel strips, a yard wide, leave the uncoiling machine at a speed sometimes approaching 900 feet a minute, the G-E relay looks for defects—"pinholes."

When the light beam of the unit, aimed at the strip, hits any defects, a diverter mechanism goes into action and throws faulty sections off the production line.

On that part of the G-E Test course known as "Industrial Control Test," student engineers sometimes work with these ingenious devices, testing and experimenting in a search for new applications.



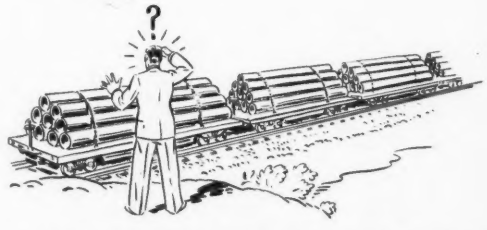
100,000 HORSEPOWER

AN 80,000-kilowatt turbine-generator, using steam at a pressure of 1250 pounds per square inch and at 900 F in a single cylinder to generate 100,000 horsepower, is being built at General Electric's Schenectady Works. It will be installed in a new $9,500,000 steam-electric station at Oswego, N. Y.

The latest results of constant research and experiment by G-E turbine engineers are embodied in this new unit. It will be the first large 1200-pound condensing unit built in a single casing; the generator will be hydrogen-cooled to reduce windage losses; special alloys are being used to meet high pressures and temperatures.

The gigantic boiler is as large as a 9-story building 36 feet wide and 54 feet deep. Steam will shoot from it into the turbine at a pressure of 1250 pounds per square inch. One twentieth of a second later the steam will be cool water, the effect of the amazing change being to drive the unit's rotor at 1800 revolutions a minute.

Soon the foremen will report—"work completed." Tests will begin, calling into action student engineers—recent graduates of engineering schools and colleges. Then, an estimated 14 months after work began, the turbine will be shipped from Schenectady.



FROM MODERNISTIC CABINETS TO 36-INCH STEEL PIPE

WHEN inspectors of the City of Los Angeles Water Department were confronted by 13,000 feet of steel pipe waiting for their inspection, they were dismayed. For inspection meant checking every square foot of the pipe to see that the layers of enamel were of a specified thickness on both the inner and the outer surfaces.

It meant the tedious task of stripping and micrometering samples of the pipe at random, the accepted but not infallible method.

On a search for a better way went one of the inspectors. He found a magazine article about General Electric's electromagnetic thickness gages being used to measure, without marring, the thickness of the enamel coating on refrigerator cabinets. The aesthetic difference between a modernistic cabinet and a steel pipe didn't bother the inspector—he simply bridged the gap with his imagination.

A gage was adjusted to the requirements of the unusual situation; with it the inspectors did the job better, more quickly, more accurately, and more easily. Not only did the gage, with its fingers of magnetic flux, check the entire surface of the pipe, but it reported back the thicknesses with an accuracy of a thousandth of an inch.

GENERAL ELECTRIC

90-100DH